BALTIC SCIENTIFIC INSTRUMENTS

Semiconductor Detectors & Nuclear Electronics for Radiation Measurement

Baltic Scientific Instruments

Baltic Scientific Instruments (BSI) was established in 1994 on the basis of Riga Research and Development Institute for Radio-Isotope Apparatus (RNIIRP, est.1966), which belonged to the Ministry for Atomic Energy of the former Soviet Union. RNIIRP had Union-wide responsibility for the development of instruments for radiation detection and measurement for the atomic energy industry, mining, oil and gas industries, space and military applications. RNIIRP developed a broad range of products, and the highest level of technical knowledge and skills to meet the most sophisticated technological demands of the Soviet Union. These are the foundations of the capabilities that BSI now brings to global markets.

Since its founding as a private enterprise BSI has specialized in the development and fabrication of devices for spectrometric analysis based on semiconductor and scintillation radiation detectors. Our products are applied in multiple industries: nuclear power; environmental monitoring; geophysics and the mining industry; medicine and healthcare; research including space sciences; security systems and customs control; and other spheres. To succeed in global markets for radiation detection and analysis equipment BSI has mastered the most demanding quality standards in each market where we have chosen to compete. See our Quality Policy.

BSI is headquartered in Riga, Latvia, one of the most livable cities in Europe with an exceptional cultural life, attractive homes, good schools and within a short drive of rural Latvia as well as some of the finest beaches in Northern Europe. Riga has been called the culture capital of Europe and has been featured as a prime tourist destination.

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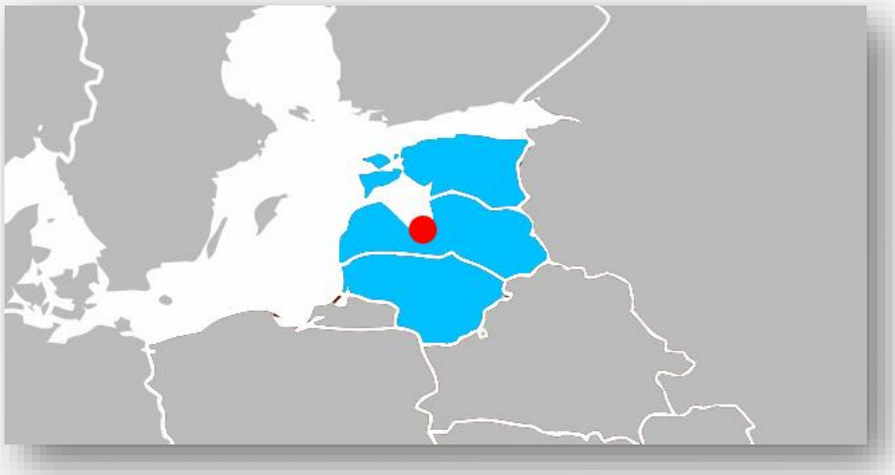

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About Us

Why Us?

OUR STRENGTH

- Individual approach
- Attention to details
- Fast delivery
- Strong R&D department
- Fast service team
- Best suppliers

OUR CUSTOMERS

- Nuclear power plants
- Environmental monitoring
- Geophysics and the mining industry
- Medicine and healthcare
- Research including space sciences
- Homeland security and customs control
- Other spheres

Individual design, customized solutions
Worldwide presence
Training and workshops
WE OFFER
Calibration and characterization
Repair and maintenance of BSI and other brands
Service team for repair and maintenance

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Why us?

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

P-type HPGe Coaxial Detectors GCD

P-type HPGe Coaxial Detectors GCD

(liquid nitrogen cooled)

DESCRIPTION

High purity germanium detectors deliver outstanding energy resolution for precise gamma-ray spectroscopy. They are essential tools in nuclear research, environmental monitoring, homeland security, and medical diagnostics. With superior sensitivity and low background noise, these detectors enable accurate identification and quantification of radioactive isotopes, ensuring reliable results in critical applications.

FEATURES

- Relative efficiency: 10% - 160%
- Energy range: 40 keV - 10 MeV
- High resolution and symmetric peaks
- HV shutdown protection
- High count rate LED
- State-of-Health Preamplifier SHP by default
- Variety of cryostat geometries

COMPLETE SET

- HPGe coaxial detector (p-type),
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Etc.

Model	Efficiency, %	Energy resolution		Peak / Compton ratio	Peak Shape	
		at 122 keV (eV)	at 1.33 MeV (keV)		FW.1M / FWHM	FW.02M / FWHM
GCD-10175	10	825	1.75	41:1	1.90	2.65
GCD-15180	15	825	1.80	46:1	1.90	2.65
GCD-20180	20	850	1.80	51:1	1.90	2.65
GCD-25185	25	850	1.85	55:1	1.90	2.65
GCD-30185	30	875	1.85	58:1	1.90	2.65
GCD-35190	35	875	1.90	60:1	1.90	2.65
GCD-40190	40	895	1.90	62:1	1.90	2.65
GCD-50190	50	895	1.90	64:1	1.90	2.65
GCD-60200	60	1000	2.00	68:1	2.00	3.00
GCD-70200	70	1000	2.00	73:1	2.00	3.00
GCD-80210	80	1000	2.10	77:1	2.00	3.00
GCD-100210	100	1000	2.10	81:1	2.00	3.00
GCD-120210	120	1000	2.10	83:1	2.00	3.00
GCD-140220	140	1100	2.20	86:1	2.00	3.00
GCD-160230	160	1150	2.20	88:1	2.00	3.00

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

P-type HPGe Coaxial Detectors GCDX

P-type HPGe Coaxial Detectors GCDX

(with extended energy range)

DESCRIPTION

GCDX extended-range HPGe detectors deliver exceptional performance, functioning not only as standard coaxial detectors but also extending the energy range down to 3 keV. Their thin contact structure, combined with a beryllium or carbon fiber input window, ensures efficient detection of low-energy photons. The detector's input window is seamlessly integrated into the end cap using advanced vacuum-sealed materials for optimal performance.

FEATURES

- Relative efficiency: 10% - 100%
- Energy range: 3 keV - 10 MeV
- Input window: Beryllium or Carbon-fiber
- HV shutdown protection
- High count rate LED
- Excellent peak symmetry and high resolution
- Variety of cryostat geometries

COMPLETE SET

- HPGe coaxial detector (p-type)
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Etc.

Model	Efficiency, %	Energy resolution			Peak / Compton ratio	Peak Shape	
		at 5.9 keV (eV)	at 122 keV (eV)	at 1.33 MeV (keV)		FW.1M / FWHM	FW.02M / FWHM
GCDX-10175	10	400	720	1.75	41:1	1.90	2.65
GCDX-15180	15	450	740	1.80	46:1	1.90	2.65
GCDX-20180	20	460	760	1.80	51:1	1.90	2.65
GCDX-25185	25	480	775	1.85	55:1	1.90	2.65
GCDX-30185	30	500	800	1.85	58:1	1.90	2.65
GCDX-35190	35	550	830	1.90	60:1	1.90	2.65
GCDX-40190	40	600	850	1.90	62:1	1.90	2.65
GCDX-50190	50	620	875	1.90	64:1	1.90	2.65
GCDX-60200	60	670	900	2.00	68:1	2.00	3.00
GCDX-70200	70	700	950	2.00	73:1	2.00	3.00
GCDX-80210	80	750	950	2.10	77:1	2.00	3.00
GCDX-100210	100	800	1000	2.10	81:1	2.00	3.00

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Gamma-rays

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Bringing Solutions

P-type HPGe Over-Square shape Detectors GCDX-OS

P-type HPGe Over-Square shape Detectors GCDX-OS

(with extended energy range)

DESCRIPTION

The GCDX-OS HPGe detectors feature an optimized over-square crystal geometry, distinguishing them from standard GCDX models while maintaining their extended low-energy detection capability down to 3 keV. Their thin-contact structure and beryllium/carbon fiber input window integrated into the detector's vacuum-sealed end cap ensure efficient transmission and registration of low-energy photons. These detectors deliver superior resolution in the 100–662 keV range, critical for precise analysis of low-energy radionuclides. The over-square crystal design (larger diameter-to-height ratio) enhances efficiency for compact samples (vials, Petri dishes, etc.) and boosts relative intensity in the 1.5–2 MeV range, despite maintaining a crystal volume comparable to GCD/GCDX detectors.

FEATURES

- Relative efficiency: 10% - 60%
- Extended energy range: 3 keV - 10 MeV
- Input window: Beryllium or Carbon-fiber
- Built-in or Remote Preamplifier types are available depending on application
- Low instrument background
- Excellent peak symmetry and high resolution
- Variety of cryostat geometries

COMPLETE SET

- HPGe coaxial detector (p-type)
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Liquid nitrogen storage and filling system
- Etc.

Model	Efficiency, %	Sensitive area, mm2	Thickness, mm	Energy resolution		
				at 5.9 keV (eV)	at 122 keV (eV)	at 1.33 MeV (keV)
OS-06350	6	1590	15	350	650	1.75
OS-07390	7.5	2000	15	390	650	1.80
OS-10350	9	2000	20	350	650	1.90
OS-12375	12	2000	35	375	680	1.90
OS-13400	13	2800	20	400	700	1.90
OS-18400	18	2800	25	400	700	1.90
OS-20450	20	3800	20	450	750	1.90
OS-26450	26	3800	25	450	750	1.90
OS-34450	34	3800	30	450	750	1.90
OS-37500	37	5000	25	500	750	2.00
OS-48500	48	5000	30	500	750	2.00
OS-60500	60	6500	30	500	750	2.00

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

HPGe Planar Detectors GPD

HPGe Planar Detectors GPD

(liquid nitrogen cooled)

BALTIC SCIENTIFIC INSTRUMENTS

DESCRIPTION

Gamma and X–ray HPGe Spectrometer is intended for the conversion of gamma and X-ray quantum energy to signals proportional to their energy level. It is also intended for use as the gamma and X-ray detection component of radiological monitoring equipment for environmental objects in nuclear energetics, industrial production, agriculture, medicine, etc.

FEATURES

- Energy range: 3 keV - 1500 keV (2500 keV)
- Ability to increase energy rate to 20000 MeV/s
- Input window: Aluminum, Beryllium or Carbon-fiber
- HV shutdown protection
- High count rate LED
- Excellent peak symmetry and high resolution
- Variety of cryostat geometries

COMPLETE SET

- HPGe planar detector (p-type)
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Liquid nitrogen storage and filling system
- Option to choose a preamplifier type with a resistive or opto-electronic feedback high energy rate up to 15000 MeV/sec

Model	Diameter, mm	Detector sensitive area		Energy resolution	
		Area*, mm2	Thickness, mm	at 5.9 keV (eV)	at 122 keV (eV)
GPD-05145	5	20	6	145	465
GPD-08155	8	50	6	155	485
GPD-12165	12	100	7	165	490
GPD-12160	12	100	10	160	490
GPD-16180	16	200	11	180	495
GPD-25300	25	500	13	300	545
GPD-36360	36	1000	13	360	585
GPD-36300	36	1000	15	300	560

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Gamma-rays

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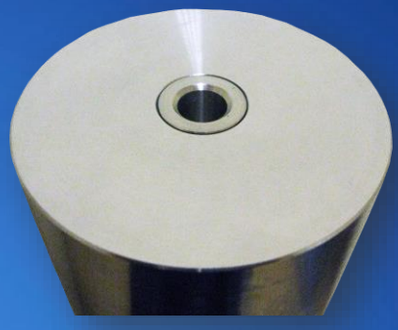

Well-type HPGe Detectors
GWD

Well-type HPGe Detectors GWD

(liquid nitrogen cooled)

BALTIC SCIENTIFIC INSTRUMENTS

DESCRIPTION

Detection of Gamma-rays in nuclear energetics and environmental control, in industry and scientific research, in nuclear medicine and other applications when the user is dealing with small amount of sample and is willing to have better efficiency if to compare to regular Coaxial HPGe detectors.

FEATURES

- Relative efficiency: 15% - 70% and higher
- Energy range: 20 keV - 10 MeV
- Well materials: Aluminum
- Thin dead layer to provide excellent efficiency
- High energy rate up to 200000 MeV/s
- Almost 4π geometry measurement
- HV shutdown protection
- Variety of cryostat geometries

COMPLETE SET

- HPGe Well-type detector,
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Etc.

Model	Well diameter, mm	Nominal volume, cc	Energy resolution	
			at 122 keV (eV)	at 1332 keV (eV)
GWD-1520	10	90	1.1	2.0
GWD-1522	16	100	1.3	2.2
GWD-2020	10	110	1.1	2.0
GWD-2022	16	120	1.3	2.2
GWD-2522	10	130	1.1	2.2
GWD-2523	16	140	1.3	2.3
GWD-3022	10	150	1.2	2.2
GWD-3023	16	160	1.4	2.3
GWD-3522	10	170	1.2	2.2
GWD-3523	16	180	1.4	2.3
GWD-4022	10	190	1.2	2.2
GWD-4023	16	200	1.4	2.3
GWD-6023	10	280	1.3	2.3
GWD-7024	10	360	1.3	2.4
GWD-7024	16	360	1.3	2.4

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Gamma-rays

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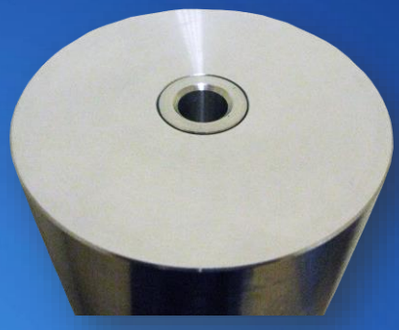

Well-type HPGe Detectors
GWDX

Well-type HPGe Detectors GWDX

(liquid nitrogen cooled)

DESCRIPTION

Detection of Gamma-rays in nuclear energetics and environmental control, in industry and scientific research, in nuclear medicine and other applications when the user is dealing with small amount of sample and is willing to have better efficiency if to compare to regular Coaxial HPGe detectors. The main difference of GWDX detectors is that they are showing not only better efficiency but also way better energy resolution at 122 keV.

FEATURES

- Relative efficiency: 15% - 70% and higher
- Energy range: 20 keV - 10 MeV
- **Extraordinary energy resolution at 122 keV**
- Thin dead layer to provide excellent efficiency
- Almost 4π geometry measurement
- Variety of cryostat geometries

COMPLETE SET

- HPGe Well-type detector
- SHP Preamplifier with cooling input stage
- Cryostat
- Cooling system (Monolith/Nicole/LN2)
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Etc.

Model	Well diameter, mm	Nominal volume, cc	Energy resolution	
			at 122 keV (eV)	at 1332 keV (eV)
GWDX-1520	10	90	**0.75**	2.0
GWDX-1522	16	100	**0.8**	2.2
GWDX-2020	10	110	**0.75**	2.0
GWDX-2022	16	120	**0.8**	2.2
GWDX-2522	10	130	**0.75**	2.2
GWDX-2523	16	140	**0.8**	2.3
GWDX-3022	10	150	**0.8**	2.2
GWDX-3023	16	160	**0.85**	2.3
GWDX-3522	10	170	**0.75**	2.2
GWDX-3523	16	180	**0.8**	2.3
GWDX-4022	10	190	**0.75**	2.2
GWDX-4023	16	200	**0.8**	2.3
GWDX-6023	10	280	**0.8**	2.3
GWDX-7024	10	360	**0.8**	2.4
GWDX-7024	16	360	**0.85**	2.4

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Bringing Solutions

Cryostats & Dewar vessels

Ultra Low-background HPGe Detectors

APPLICATION

Ultra low-background HPGe detectors are widely used in underground laboratories for determination of radionuclides activities in environmental or industrial samples at µBq/kg levels and in scientific experiments such as investigation of magnetic moment of neutrino, dark matter search, etc.

Design

- Task related design (U-type, vertical, down-looking or portable cryostat)
- Remote not cooled part of preamplifier
- Zeolite is placed near not cooled part of preamplifier in order to be outside measuring chamber

Cryostat materials

- Certified materials with low radiation impurities
- Ultrapure aluminium–silicon alloy with U + Th content < 1, 0.5 or 0.2 ppb for detector holder and endcap
- Freshly produced electrolytic copper for coldfinger an pedestal
- Tested on radiopurity selected stainless steel screws and sapphire insulators

Technology

- Transportation of HPGe crystal and cryostat materials by surface freight
- Minimization of fabrication time (location of materials above ground)
- Assembly in a cleanroom
- Cleaning and passivation of copper surfaces
- Storage of crystal and cryostat materials in a container made from materials effectively slowing down and absorbing neutrons (water and Cd)

Design features

- Fabrication of large volume HPGe detectors without bulletization
- Front end electronics made on low-background Teflon substrate
- Passive screen between front end electronics and HPGe crystal made from Pb with Bi-210 radioactivity < 0.1 Bq/kg
- Double-crystal HPGe detector design
- Multi-crystal HPGe detector design

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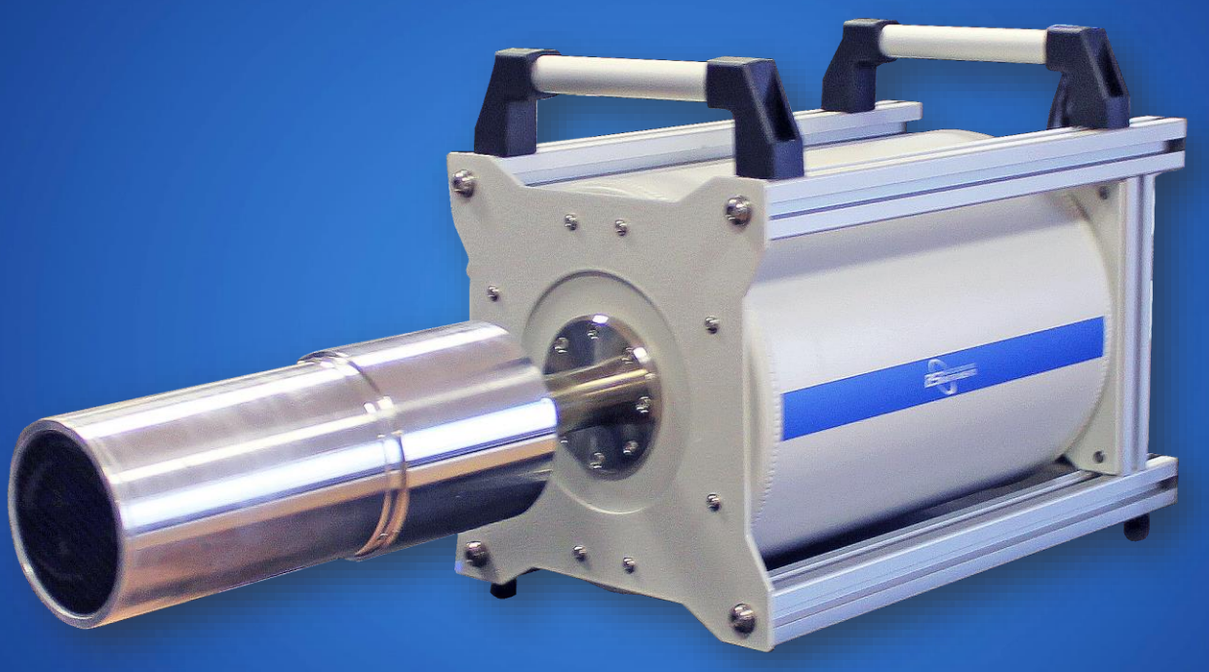

Portable HPGe Detectors

Portable HPGe Detectors

DESCRIPTION

The portable HPGe detection unit offers high-resolution gamma spectroscopy in a compact form, ideal for field applications such as environmental monitoring, nuclear safety, homeland security, health physics, and emergency response. Utilizing liquid nitrogen (LN_2) cooling, it ensures optimal detector performance with excellent energy resolution. The system is designed for reliable operation in remote or demanding environments, with rugged construction and easy transportability. Despite the need for periodic LN_2 refills, it provides stable, high-quality spectral data and fast start-up. This unit is a trusted solution for precise radioisotope identification where portability and laboratory-grade accuracy are required.

FEATURES

- Ultra-light cryostat fabrication for minimum gamma absorption
- Light weight aluminum construction
- Detection of radiation in any spatial orientation
- Available with all HPGe detector types
- Transportation and storage without cooling

COMPLETE SET

- HPGe detector in portable cryostat
- SHP Preamplifier with cooling input stage
- Portable Dewar vessel
- Protective frame with handles
- Cable set

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Etc.

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BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

HPGe Detectors
with electro-mechanical cooling
MONOLITH

HPGe Detectors MONOLITH

(electro-mechanical cooler)

DESCRIPTION

The Monolith system provides electro-mechanical cooling for HPGe detectors, eliminating the need for liquid nitrogen. Based on a Stirling cooler with a mean time to failure for thousands of hours, Monolith offers efficient, low-power operation with minimal heat output. Unlike LN2 systems, Monolith enables instant recovery after power loss and ensures continuous performance without thermal cycling. Integrated Active Vibration Cancellation maintains resolution quality close to LN2-cooled systems. The Monolith system is suitable for a range of applications requiring stable, maintenance-free cryogenic operation, including laboratory, field, and industrial environments.

FEATURES

- 10% - 160% efficiency HPGe p-type coaxial detectors are available
- Energy range from 40 keV to 10 MeV for GCD model
- Energy range from 3 keV to 10 MeV for GCDX/GCDX-OS models
- Excellent peak symmetry
- No full thermal cycle needed after power loss
- L-shape cryostat is available

ADD-ONS

- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Advanced software package MCC-MT
- Lead Shield
- Trolley on wheels
- Cable set extension

COMPLETE SET

- HPGe detector (any BSI type)
- SHP Preamplifier with cooling input stage
- Long-lasting Stirling cooler with low power consumption
- Controller for the Stirling cooler
- Active and passive vibration cancellation system
- Protective housing
- Integrated LCD to display status

Parameter	Value
Cooling time of the detector, hours	< 13
Orientation in space	At any angle
AC Power supply	230 V; 50/60 Hz
Power consumption, max	250 W
Power consumption, normal	120 W
Range of the operating temperatures, ° C	0 ... +40

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BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Hybrid cooling for HPGe detectors Nicole

Hybrid cooling for HPGe detectors Nicole

DESCRIPTION

The hybrid cooling system for HPGe detectors represents a significant advancement in cryogenic technology, combining the long-established reliability of liquid nitrogen with the efficiency and autonomy of electrically powered cryocoolers. This intelligent system ensures continuous detector operation for up to two years and more without refilling. Engineered for minimal vibration and ultra-quiet performance, it preserves excellent energy resolution. Integrated health monitoring, ensures reliable, low-maintenance operation. Its compact footprint and energy-efficient design make it ideal for laboratory applications.

FEATURES

One of the main advantages of the Nicole hybrid cooling system is its exceptional ease of maintenance and service. The system provides a USB interface, allowing users to access all operational parameters. Most key parameters are also displayed on the LCD screen. In the event that maintenance, repair, or replacement of the cooler is required, the cooling unit can be dismantled in just 15 minutes. This enables the user to continue measurements using only liquid nitrogen—an especially critical feature when routine measurements cannot be interrupted.

ADD-ONS

The hybrid cooling Nicole is available with an adapter to accommodate HPGe detectors with two diameters of cryostats (cold fingers): 32 mm and 38 mm, or 1.25 inches and 1.5 inches

NOTICE

Nicole hybrid cooling is available for the following HPGe detector cryostat modification:

- Vertical
- Horizontal
- L-type
- U-type

Parameter	Value
Type of Stirling-cycle cryocooler	Pulse-tube
Nominal Cooler Input Power	< 140 W
Power Supply	AC 220V
Dewar vessel volume	28l
Liquid nitrogen holding time when cryocooler is operating (period between refilling)	12 - 18 months and more
Cryocooler MTBF	>45000 h
Maximal liquid nitrogen productivity	60 gr/h
Able to accompany vertical dipstick cryostat with diameter	1,25"
Loss of nitrogen in case of non-working electrical cooling	< 3l/day
Dimensions	Height 650mm Diameter 440mm
Operating temperature	0°-40°C
Humidity	20% - 90% without condensation

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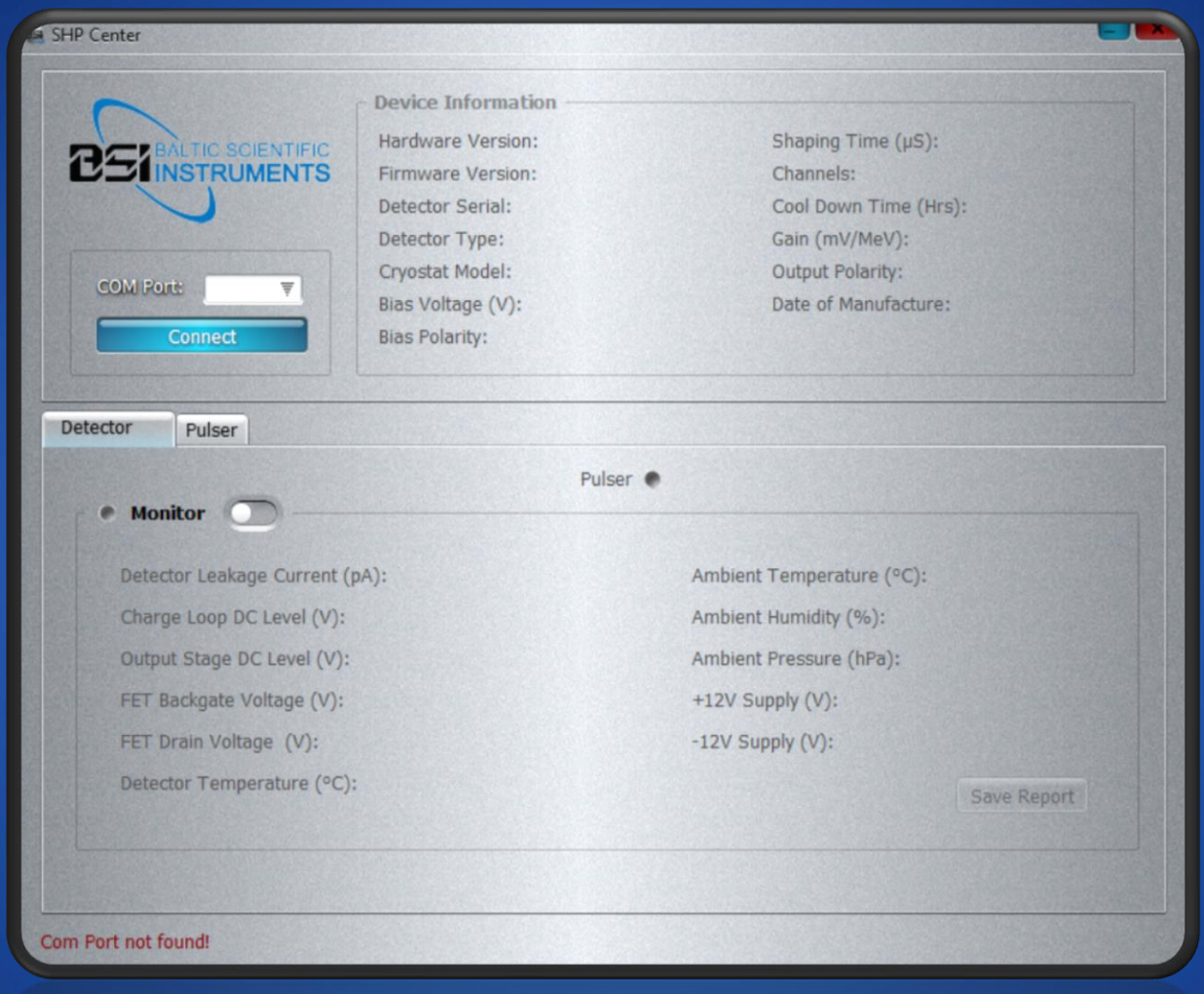

State of Health Preamplifier (SHP)

State of Health Preamplifier (SHP)

(for HPGe detectors)

DESCRIPTION

State of Health Preamplifier (SHP) is a low noise and fast resistive-feedback preliminary amplifier intended for operation within gamma- and X-ray Detection Unit based on HPGe detector.
SHP module allows to perform monitoring of detection unit basic parameters in real-time mode or per request of the operator. Analysis of the performance in the long run allows to predict possible failure of the detector and to perform timely preventive maintenance.
SHP module is specially designed to operate together with BSI HPGe detectors via USB interface. Adjustment of SHP parameters is performed through the software package developed specially for preventive maintenance and service activities

FEATURES

SHP module provides information:

- Preamplifier serial number
- Detector serial number
- Detector type
- Cryostat model
- Recommended HV value
- HV polarity
- Output signal polarity
- Shaping time recommended value
- Flat top time recommended value
- ADC parameters
- Recommended cooling time

Measuring and display preamplifier's parameters in real-time:

- FET voltage
- FET current
- FET drain voltage
- Preamplifier output voltage
- Resistive-feedback output voltage of the preamplifier
- Preamplifier power supply voltage
- Detector leakage current
- HPGe crystal temperature
- SHP module internal temperature
- SHP module internal humidity
- SHP module internal atmospheric pressure

Parameter	Value
Energy range	from 3 keV to 10 MeV
Output signal polarity	negative
Output signal Rise time (µS)	≤ 0.15
Output signal fall time (µS)	≥ 50
Conversion Gain mV/MeV	220-250
Output Impedance (ohm)	50
Max constant input count rate Co-60	2x10E5 cps

*Indicator warns of excessive counting rate

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Multi Channel Analyzer
BOSON

Multi Channel Analyzer BOSON

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FEATURES

- Boson MCA acquires and displays spectra with overlapping by energy range up to 1000 times
- No resolution deterioration at operation in the beginning of spectrum energy range
- Stable operation with preamplifiers of TPR type with output voltage swing up to +/- 10 V and reset duration up to 250 us
- Automated P/Z adjustment
- Improved dead time correction
- Spectrum stabilization
- Setting and control of all parameters using colour LCD display with touch screen
- Complete remote control of Boson MCA via software from PC
- Base Line Restorer (BLR)
- Operation with preamplifier TPR

COMPLETE SET

- Boson MCA with software,
- Color LCD display with touchscreen,
- HV power supply unit,
- Preamplifier power supply unit (+/-12 V; +/-24 V),
- MCA state display indicator
- Connectors: input; protection control output analogue and digital. Available interface to connect to computer: USB, LAN, RS-232. Connector for preamplifier power supply unit. Two HV connectors for detector HV power supply. GATE signal connector. Outer power supply connector.
- AC/DC adaptor
- Boson MCA has control for all operation modes by the program installed in remote computer

Parameter	Value
Shaping time constant	4 shaping time constant 0,5...24 us (by request))
Coarse gain	5,10,20,40,80,160,320,640 (by request)
Fine gain	1 ... 2
Input signal polarity	+/-
TRP preamplifier support	Yes
Integral nonlinearity	+/- 0,025%
Differential nonlinearity	<1%
Gain temperature coefficient	<50 ppm/^{0} C
MCA, chn	16k
Input count rate	up to 200000 cps
Power preamp	+/- 12V 60mA +/- 24V 40mA
HV out	+/-5000 V or +/-2000 V /0.5mA
Power supply	+9... 18 V; 1 A
Consumed power	12 W
Indication	TFT color touchscreen 3.2"
Communication interface	USB; Ethernet; RS-232 or I/O control by request

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Digital Multi Channel Analyzer MCA 527

Digital Multi Channel Analyzer MCA 527

DESCRIPTION

The MCA527 is a portable, battery-powered 16K MCA offering laboratory-grade performance. It integrates a high-voltage supply for detectors, a preamplifier power supply, a coarse amplifier, and digital filtering/analysis. When paired with a detector, it forms a compact gamma spectroscopy system ideal for field applications such as International safeguards, Environmental monitoring, Nuclear waste management, Radioactive material transport control.
This lightweight, high-performance solution meets the rigorous demands of on-site measurements.

FEATURES

- Automated base line restorer and threshold adjustment
- Automated or manual pole zero adjustment without oscilloscope
- System dead time and count rate indication
- Dead time correction
- Automated spectrum recording
- Peak stabilization
- Basic analysis functions (energy calibration, FWHM, peak area and integral calculations, spectrum stripping and smoothing)
- File menu: write/read functions with drive/path - and file pick list functions
- Setup menu: ADC, Amplifier, Presets, Memory splitting, MCA mode, MCS mode, Multi spectral recording mode, automated instrument configuration using setup file
- Analysis menu: Energy calibration und further analysis functions defined according the purpose. Energy calibration with linear calibration curve using 2 peaks or energy channel pairs
- Acquire control: Start, Stop, Erase, Presets Incorporated Help texts Print screen for print via system printer (Windows) quick documentation
- Display functions: Automated vertical full scale (VFS), manual and logarithmic VFS, cursor functions, expand and unexpand, ROI setting
- Detection limit formalism: more than 17

Parameter	Value
Channel Splitting	128, 256, 512, 1024, 2048, 4096, 8192, 16384
Shaping Time	0.1µs to 25.5µs, step 0.1µs
Flat Top Time	0µs to 15µs, step 0.1µs
Differential non-linearity (@4K and 1µs shaping time)	< 1 %
Max counts in a channel	$2^{32} - 1$
Base Line Restorer	BLR with adjustable averaging
Pole Zero Adjustment	Decay time down to 40µs can be compensated
Base Line Restorer	BLR with fixed averaging
Pole Zero Adjustment	Decay time down to 40µs can be compensated
Preamp Power Supply	±12V, ±60mA ±24V, ±60mA
Power supply	via USB PC-Port, ≤500mA
HV Supply	up to +/- 3600V up to +/- 5000V
Computer Interfaces	USB, Ethernet, RS232

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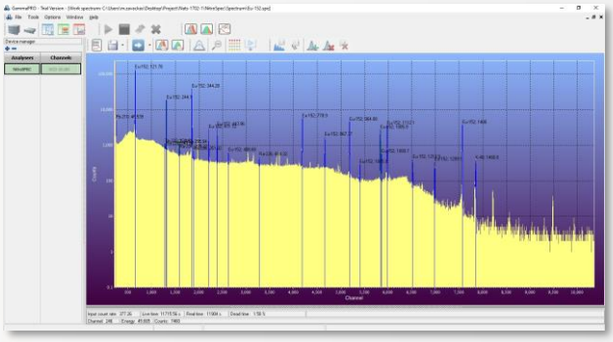
Gamma analysis software GammaPRO

Gamma analysis software GammaPRO

FUNCTIONALITY

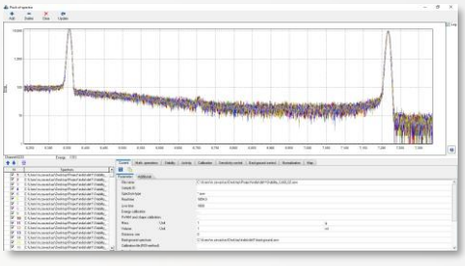
GammaPRO provides all the tools necessary for separate peak analysis, namely:

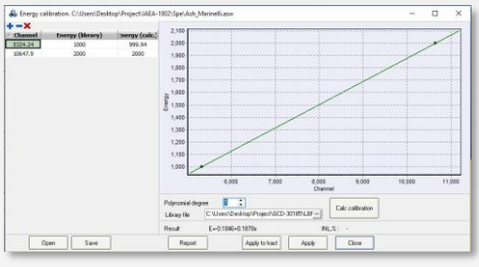
- Energy calibration
- Direct peak search in spectrum and peak search considering the radionuclides and their peak energies specified in the library
- Peak and multiplet fit by Gaussian and other functions
- Automatic identification of peaks considering count sample density as a calculation parameter considering background as a calculation parameter
- Calculation of efficiency curves (efficiency calibration), FWHM calibration, peak shape calibration

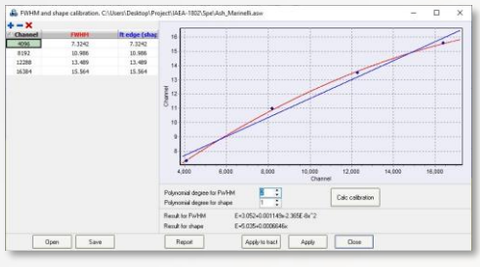


FEATURES

- Visualization of spectra and spectrum acquisition progress;
- Peak search and fit by Gaussian
- Identification of radionuclides
- Energy, FWHM and peak shape calibration
- Calculation of efficiency curves and sensitivities
- Calculation of activity by peak method
- True summation correction
- Calculation of activity by matrix (ROI) method
- Calculation of ambient dose
- Calculation of MDA according ISO 11929
- Simple and easy to use report editor
- Library of radionuclides and library editor
- Mathematical operations (sum, subtraction, normalization etc)
- Batch spectra processing
- Simple and easy to use report editor
- Library of radionuclides and library editor
- Quality assurance control
- Database MS Access which provides transfer and storage of measurement results in a database
- Log which provides automatic registration and storage of measurement and quality assurance results
- Support for the main spectrum formats: SPE, N42, CNF, CHN, SPC, ASW, TXT etc.







ADDITIONAL MODULES

Scenario module - The module allows you to automate the process of operating the software remotely by external devices that are being integrated with gamma spectrometers. Possible to integrate gamma spectrometer with:

- Robotic sample changers
- Nuclear waste assay monitors
- Free release monitors
- Whole body counters and spectrometers
- Mobile measurement systems
- etc.

FRM module - The module is intended for spectrum analysis acquired on Free Release Monitor:

- Calculate the specific activity of hard-to-measure nuclides using the nuclide vector method
- display in 3D the distribution of activity over the volume of the sample
- show on the 3D model of the measured sample the found areas with high radioactivity (the so-called "hot" spots).

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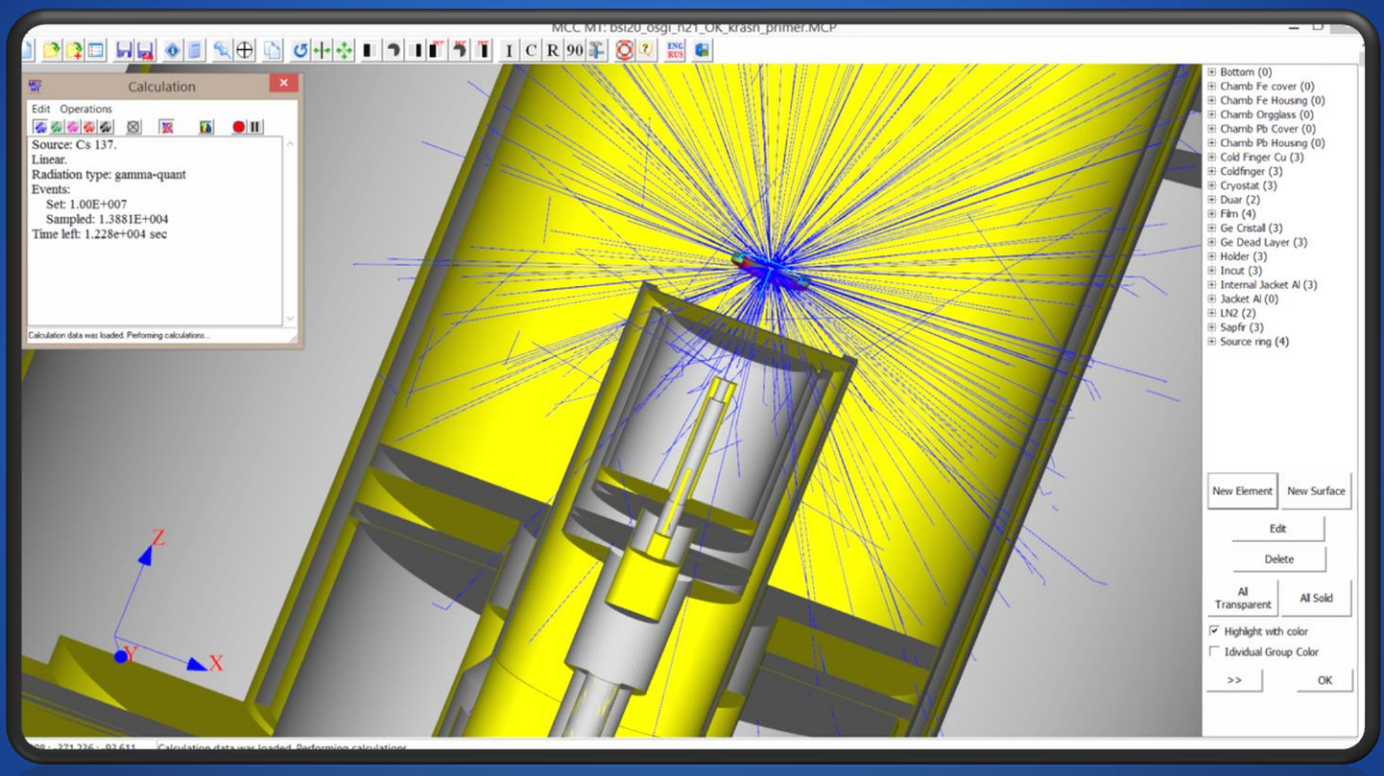


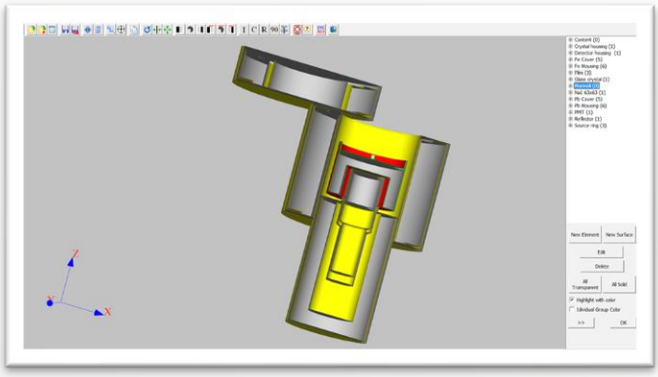
Calibration software MCC-MT

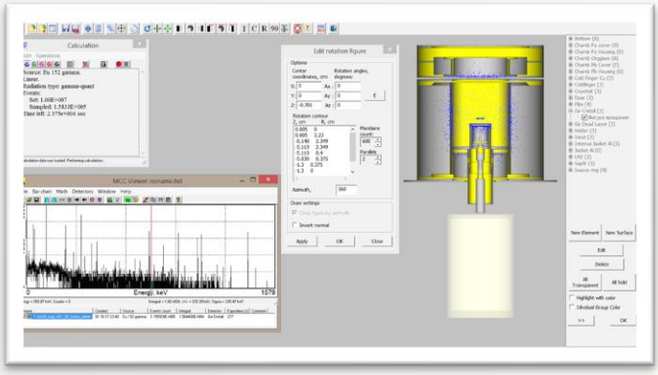
(Monte Carlo simulations)

Calibration software MCC-MT (Monte Carlo simulations)

DESCRIPTION

Software package MCC-MT (Monte Carlo Calculation Multi Thread) is intended for 3D-modelling of physical experiments and calculation of radiation detectors response functions using Monte Carlo simulation method. Software MCC-MT based on multi-threading technology providing significant increasing the rate of simulation and getting fast result as spectrum.





APPLICATION

- Monte Carlo simulation spectra of gamma, beta and radiation
- Characterization detectors and detection systems
- Calibration of instruments used for ionizing radiation detection and measurements without using the hazardous ionizing radiation for human health
- Obtaining clear picture of the internal processes of radiation transfer in order to optimize the design of the measuring devices and their protection
- Acceleration, simplification and reduction in the cost of design and optimization of ionizing radiation detection systems

FEATURES

- High accuracy of calculations
- Detailed 3D-scene based on Open GL graphics technology providing maximum representation and visibility of modeling
- Availability of replenished database of sources and materials
- Possibility of creating the maximally complex measuring systems
- Forming multidetector systems and schemes of coincidence
- Display of the results in the form of an ideal and real spectrum
- Tracing and drawing trajectories of particles during calculation process
- Availability of the ready and test projects in the distributive package (HPGe, scintillation detectors, protective lead shielding, volumetric sources and samples, etc.)
- Accounting cascade summation ('Full cascade' source type)

Parameter	Value
Energy range	10 keV - 10 MeV
Particles	photons, electrons (positrons), heavy charged particles
Figures	cylinder, cone, parallelepiped, torus, sphere, shear shape, rotation figure, polygon, disk.
Types of spectra	linear, beta - continuous, continuous, full cascade.
Projects views	contour, grid, fill with color, section, fill + grid, section + fill with color.
Types of source geometries	point, volumetric

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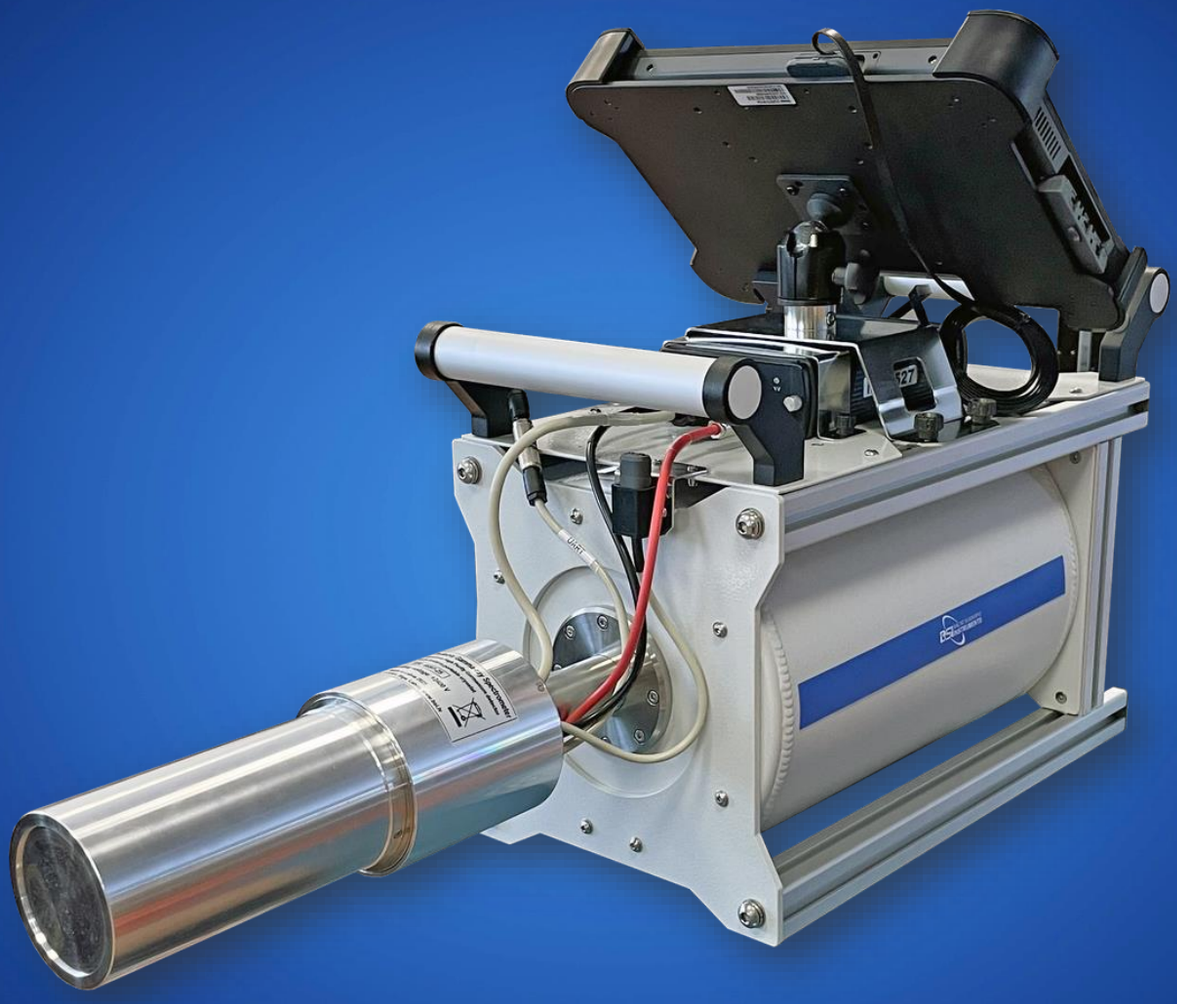

Hand-held Integrated Gamma Spectrometer

Hand-held Integrated Gamma Spectrometer

DESCRIPTION

Hand-held Integrated Gamma Spectrometer with an integrated HPGe detector, preamplifier, multichannel analyzer, batteries, and software offers relatively compact, portable solution for high-resolution gamma-ray analysis. Its all-in-one design enhances field usability, requiring no external components for setup.

APPLICATION

Hand-held Integrated Gamma Spectrometer is ideal for nuclear safety, environmental monitoring, radiological emergency response, CBRN and waste characterization, it ensures rapid deployment and reliable data acquisition. The integrated system minimizes cabling, reduces noise, and simplifies operation, making it highly efficient for both laboratory and on-site measurements.

COMPLETE SET

- Hand-held Integrated Gamma Spectrometer mono-unit includes the following:
- HPGe detector unit (all types except GWD and GDWX) in 7l Dewar vessel
- State-of-Health Preamplifier SHP
- Digital Multichannel Analyzer
- Analytical software package for quantitative and qualitative analysis
- On-board rotating color display with touch screen
- Integrated battery set
- Accessories: battery charger, LN2 filling funnel, etc.
- Documentation set

Options:
- Advanced software package for Monte-Carlo simulations
- Transport plastic case on wheels

Parameter	Value
Integrated library	Yes, adjustable
Battery powered Spectrometer autonomy	6-8 hours
Weight	< 22 Kg
Operating temperature	0°C - +40°C

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HPGe Spectrometer with Lead Shield

HPGe Spectrometer with Lead Shield

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DESCRIPTION

The Coaxial HPGe Detector with Lead Shield is designed for high-resolution gamma spectrometry, allowing precise identification and quantification of radionuclides in a wide range of environmental samples. It is commonly used to measure gamma radiation in rocks, minerals, sludge, slag, soil, plants, sediments, and food. The integrated lead shielding minimizes background radiation, significantly improving detection sensitivity and accuracy, making it ideal for laboratory analysis in environmental monitoring and radiological assessments.

FEATURES

- Available in Vertical and U-type cryostat
- Adopting precision gamma-spectrometry methods
- Radionuclide identification and determination of their specific activity
- Low level of instrumental background
- Low threshold for radionuclide detection
- Separate and simultaneous measurement of activity of 100 radionuclides
- Several grades of instrument material (Al, Cu, etc.) radiopurity:
    - Standard spectrometric
    - Low-background
    - Ultra low-background
- All HPGe cooling types are welcome (Monolith/Nicole/LN2)
- Lead thicknesses: 100mm and 150mm

COMPLETE SET

- Detection Unit based on HPGe detector
- Lead Shield with a support
- Multi Channel Analyzer MCA
- Analysis Software GammaPRO
- Cable set
- Documentation

ADD-ONS

- Advanced software package MCC-MT
- Liquid nitrogen level monitor (LN2 Monitor)
- Etc.

Parameter	Value
Detection limit for Cs137 radionuclide specific activity, measurement time 1 hour, Bq/kg	0.5
Absolute sensitivity to gamma flux for 30% efficient detector, pulse/quantum	4.5×10^{-3}
Instrumental background intensity for energy range from 40 KeV to 3 MeV, pulse/KeV x sec	5×10^{-4}
Cs137 radionuclide specific activity measurement error for measurement time 1 hour, %	20

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HPGe Mobile Spectrometer
WAM Mobile

HPGe Mobile Spectrometer WAM Mobile

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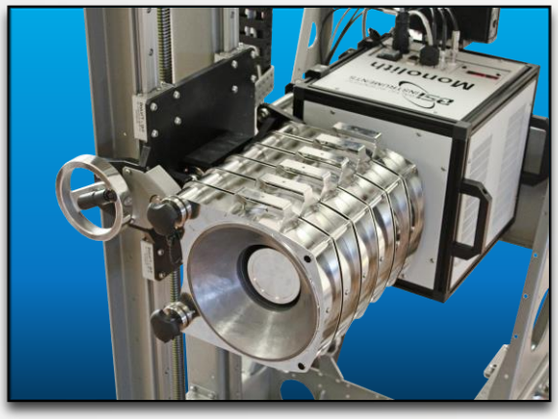
APPLICATION

Registration of gamma and X-Ray spectra for applications including: radiological monitoring of the environment; industrial and agricultural products; nuclear power facilities and equipment; and with the storage and processing of radioactive waste.

FEATURES

- Optimal sizes and weight for mobile application
- Detection unit is placed on a manually or electrically driven trolley
- Trolley is equipped with a lead shield and collimator set
- Lead shield thickness can be 25mm or 50mm depending on the application
- Detection unit can be LN2 or electrically cooled
- Possible to equip with large capacity batteries for autonomous operation in the field even with electrically cooled detection unit
- Equipped with laser distance meter for more accurate measurement
- Complete spectrometer can be characterized at factory
- Simplicity of operation and servicing



COMPLETE SET

- HPGe detector for gamma spectroscopy
- Multichannel analyzer of operating with a laptop PC or tablet PC
- Software packages for quantitative and qualitative analysis
- Advanced software package for characterization using Monte-Carlo calculations
- Lead Shielding with collimator set
- Manual or electrically driven trolley
- Laser distance meter
- Cable pack and documentation

Parameter	Value
Top measurement point in horizontal position, mm	1250
Bottom measurement point in horizontal position, mm	450
Bottom measurement point in vertical position (looking down)), mm	95
Maximum speed on flat (for electrically driven trolley))	Slow Mode - 1.25km/h Fast Mode - 4.00km/h
Complete system dimensions (L x W x H), mm	1498 x 722 x 1588
Wheelbase, mm	945
Ground Clearance, mm	100

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Robotic Gamma Spectrometer

with sample changer

Robotic Gamma Spectrometer

with sample changer

DESCRIPTION

The Automated Spectrometer is intended for the detection and analysis of radio nuclides from various types of environmental objects such as rocks, minerals, sludge, slag, soil, plant, sediment and particulate matter in air and water. The spectrometric system is able to determine the composition of a sample based on the photon energy and the activity based on the photon flux. The low-background lead shielding together with the HPGe detector gives precise results even for low activity materials.

FEATURES

The fully automated sample changer enables the user to measure more than 40 samples, without having to interact with the Robotic Gamma Spectrometer. This reliable robotic sample changer increases the productivity and reduces the possibility of health risks for the operator

COMPLETE SET

- Gamma-ray detector based on HPGe detector in U-style cryostat with remote preamplifier and 30L Dewar vessel
- Lead shield
- Multichannel analyzer
- Software for spectra processing, identification of radionuclides and calculation of their activities
- Software for efficiency calibration of arbitrary shaped objects
- Automatic sample changer based on robot arm with compact controller
- Table with sample holders and safe cabinet
- Barcode reader together with barcode printer
- Control software for robotic arm
- Master controller with process managing software
- Liquid nitrogen sensor and monitor (for LN2 solutions)
- Cable set of 3m length

Robotic Arm

The seven-axis robot handles a payload of up to 3kg and with, practically, unlimited reach, the robot is able to carry out a series of operations using flexible rather than hard automated solutions. In addition to a horizontal reach, the robot has the ability to reach below its base. Furthermore, the robot has a very compact turning radius, which is enabled by the robot symmetric architecture, without offset on axis 2. This ensures the robot can be mounted close to other equipment.

Basic characteristics of Robot arm:

- Seven-axis manipulator
- Machine vision
- Payload: 3 kg
- Reach: per request
- Accuracy: +-0.01 mm
- Weight: 25 kg
- All motors and cablings enclosed
- Compact controller
- Sample holder tool for vessels with diameter in range 40 – 110 mm.

SAMPLES

Measurement geometries are:

- Bottles
- Denta
- Marinelli
- Petri vessels
- Test tubes
- Etc.

VIDEO

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Prompt Gamma Neutron Activation Analysis (PGNAA) Spectrometer

Prompt Gamma Neutron Activation Analysis (PGNAA) Spectrometer

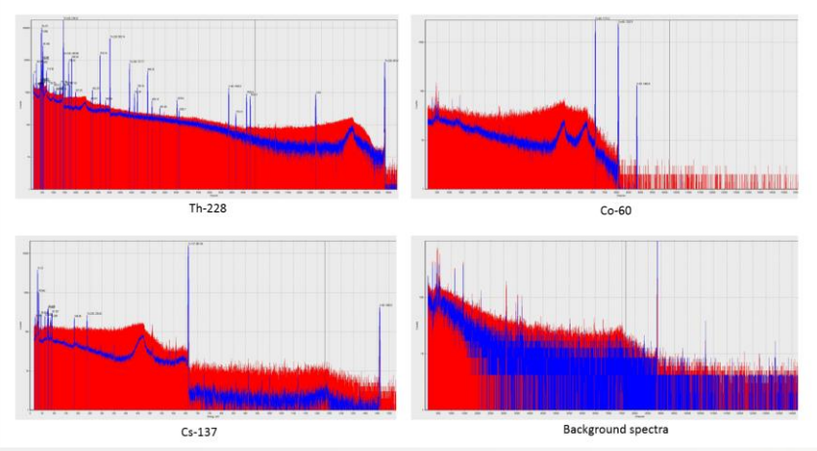
DESCRIPTION

Unlock the future of material analysis with our state-of-the-art Prompt Gamma Neutron Activation Analysis (PGNAA) Spectrometer. Designed for precision and efficiency, our PGNAA spectrometer is the ultimate solution for industries requiring rapid and accurate elemental analysis of bulk materials. Ideal for mining, cement production, environmental monitoring, and recycling, it provides unparalleled analytical capabilities.

Our PGNAA spectrometer delivers real-time, non-destructive analysis of elements within a sample, allowing immediate feedback and decision-making. It detects a wide range of elements, including trace elements, with exceptional accuracy, ensuring compliance with industry standards.

What sets our PGNAA spectrometer apart is its robust design and user-friendly interface, integrating seamlessly into your workflow for maximum efficiency. The advanced software provides intuitive data interpretation, enabling even non-expert users to operate it easily.

The system can reduce the Compton background by more than 10 times depending on the energy range of the selected peak.



Red spectrum - active shielding is off.
Blue spectrum - active shielding is on.

APPLICATION

PGNAA Spectrometer is intended for:

- Analysis of the radionuclide composition of samples containing trace amounts of radionuclides;
- Search for decay products of radionuclides of anthropogenic or natural origin;
- High registration efficiencies and low detection limits are achieved with;
- Reduction of natural background levels through the use of materials purified from radionuclides;
- Increase in peak contrast due to active suppression of Compton scattering quanta.

PGNAA Spectrometer is applicable in:

- Mining and Mineral Exploration: For accurate and rapid elemental analysis of ores and minerals.
- Environmental Monitoring: Detecting and quantifying pollutants in soil and water.
- Agriculture: Analyzing soil composition to optimize fertilizer use and crop yields.
- Petrochemical Industry: Monitoring elemental composition in crude oil and its derivatives.
- Geological Research: Studying rock and sediment samples for scientific research.
- Pharmaceutical Industry: Ensuring the purity and composition of raw materials and finished products.
- Academic and Research Institutions: Conducting advanced research in various scientific fields.

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Waste Assay Monitor HERCULES

Waste Assay Monitor HERCULES

APPLICATION

The WAM measuring system is intended for the measurement and the determination of nuclear waste activities, activity concentrations, total activities and total activity concentrations of the selected radionuclides which emit gamma radiation in a range from 100 to 1500 keV. Total activities are the sum of activities of individual radionuclides; and total activity concentrations are the sum of all activity concentrations of individual radionuclides. Solids and materials with an average density up to 2500 kg/m3 located in the standard drums with a volume of about 0.2 m3 are measured.

FEATURES

The WAM (Waste Assay Monitor) is a complex measuring system which is intended for the monitoring of radioactive waste in standard 200-litre drums. WAM involves the following systems:

- Monitor – a fixed segmented gamma-spectrometric monitor for the determination of activities of selected radionuclides in the individual drum segments with vertical motion and collimator
- Transfer system is used for moving the measuring part from/to the drum measured
- Dose rate monitor, direction-dependent, measures the dose rate of the segment in the defined distance from the drum
- Dose rate monitor measures the background dose rate
- Rotary table, control and power supply switchboard

Parameter	Value
Energy range	100 to 1500 keV (resolution >2 keV at 1332 keV)
Radionuclides measured	Cs-134, Cs-137, Co-60, Mn-54, Fe-59, Nb-95, Zn-65, Zr-95, Co-58, Cr-51, Ce-144, Hf-181 and Ru-103 (and others)
Measuring range	from 2.5 kBq (for background of 300 nSv/h, for ^{60}Co in 0.2 m^3 drum with an average material density of 300 kg/m^3 and measuring time of 30 min.) up to: 1 GBq
Measurement precision	± 20 % (for the uniform activity distribution and the density in the volume measured) maximum 50 % for the material density of 1000 kg/m3 in the drum
Detector	HPGe and/or scintillator (NaI, SrI, LaBr, etc.)
Material density	up to 2500 kg/m^3
Material volume	up to 0.2 m^3
Material weight	up to 700 kg (Maximum drum weight)
Power supply	220 V +22/-33 V, 50 Hz., 2 kW, Maximum power interruption up to 20 ms. TN-S power supply system

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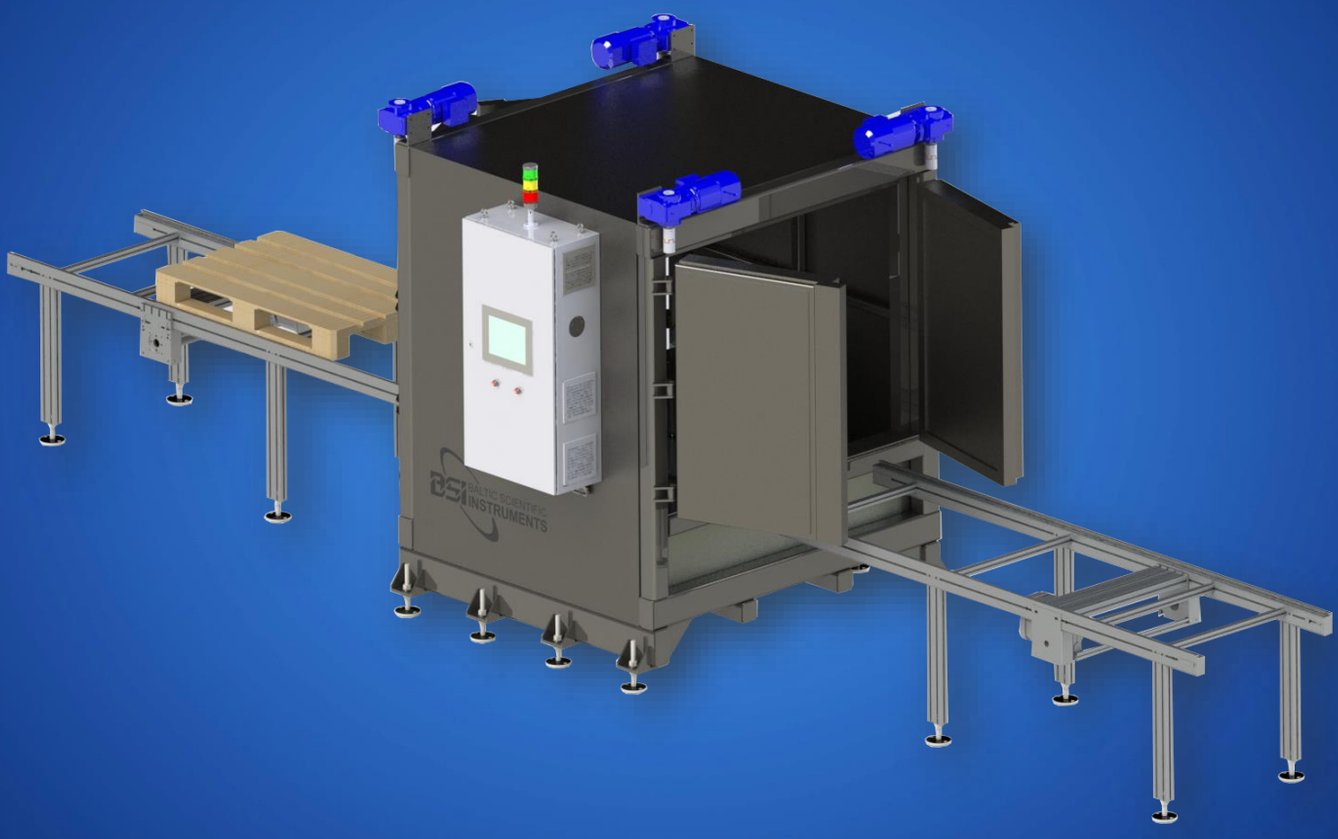

Free Release Monitor HERCULES-FRM

Free Release Monitor HERCULES-FRM

APPLICATION

The HERCULES-FRM is designed for reliable free release measurements of objects, containers, tools, and materials in nuclear facilities and other radiation-controlled areas. The system ensures compliance with clearance criteria by detecting even low levels of radioactivity. Equipped with 16 (or more) plastic scintillators and advanced digital multichannel analyzers, the FRM provides precise, reproducible results and full remote-control capability. Analytical software supports preset measurement scenarios based on object type, geometry, and weight, ensuring high flexibility for different applications. All measurement results are stored in a database, enabling traceability, automated reporting, and long-term documentation. Objects can be loaded from the front or back using forklifts or cranes, making the system suitable for both small items and large containers. The stainless-steel chamber construction guarantees durability and easy decontamination in industrial environments.

GENERAL

- Overall dimensions of the FRM: 5000x2300x2100mm (LxWxH)
- Overall weight of the FRM: 10000kg
- Operation temperature: +10…+35°C
- Ready to accommodate object with size 1.2m x 0.8m x 1.0m (L x W x H)
- Lead walls not less than 50mm thick
- Stain-less steel protection
- External and internal automatic conveyor
- Inbuilt scales

Plastic scintillators (HPGe detectors optional)

- 16 or 24 or more plastic scintillators equipped with PMTs
- Energy range from 100 to 3000 keV
- Detection limit for Co-60 is less than 300 Bq

Software

- Total activity calculation
- Visualization of measurement and diagnostic information
- Storage of measurement data, controlled parameters and fixed constants in internal memory
- Control of all mechanically movable mechanisms
- Control and reset of the FRM in case of failure of automation
- Self-diagnostics control
- Visual and audible alarm in case of failure or exceed of previously set levels
- Alarm in case of fixed level activity exceed for separately chosen radionuclide
- 3D visualization interface for measurement object monitoring and setting geometrical parameters in order to decrease measurement uncertainties
- Visualization of inhomogeneities in activity distribution
- Automatic change of measurement parameters depending on measurement geometry (Geometry must be set up preliminary)
- All software packages run under Windows operation system

Control box

- Control box of the FRM includes the following components:
- Set of MCAs for reading and transforming signals from PMTs of plastic scintillators
- Set of power supplies for different modules of the FRM
- Set of controllers to manage all components of automation process
- Control panel with colour LCD display and touchscreen
- An emergency stop button is provided on the control box and the measuring chamber

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

AirTrack
Aerosol Monitoring Station

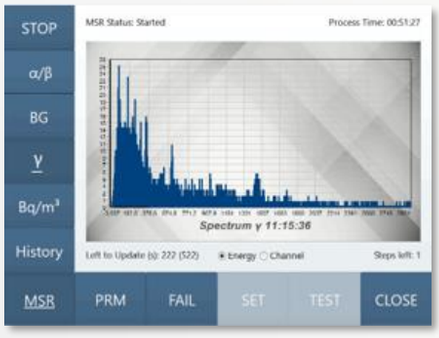
AirTrack Aerosol Monitoring Station

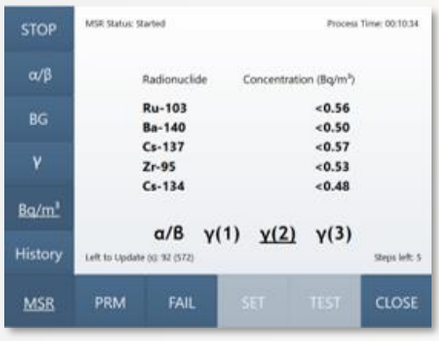
with automatic filter changer

DESCRIPTION

The Aerosol Monitoring Station AirTrack represents a breakthrough in autonomous radiation surveillance which is specially developed for continuous automatic measurement of the concentration of alpha, beta, and gamma radionuclides in airborne aerosols.

AirTrack utilizes silicon, high-purity germanium or scintillation detectors (gamma detectors are fully interchangeable without any design modifications) for alpha, beta, and gamma monitoring in the air.
With exceptional precision, this advanced system enables rapid and accurate detection of radioactive aerosols.
Designed for autonomous operation, it delivers real-time data, making it ideal for industrial, research, and emergency applications.





FEATURES

- Touch screen user interface, easy to learn and intuitive operation
- 1024-channel MCA for alpha channel, 4096-channel MCA for gamma channel
- Removable cartridge with 48(60)-filter capacity, up to 2 months of autonomous operation, any Ø47 mm disk filter is suitable
- Compensation for radon progeny and gamma background
- Evaluation of measurement results in accordance with ISO 11929
- Automatic filter replacement when total activity or differential pressure thresholds are exceeded
- Automatic stabilization of the gamma spectrometric channel using the K-40 peak
- Continuous self-diagnostic procedures with alarm signals and status messages
- 1 minute update period of the radionuclide concentration information
- Data transfer via LAN, USB and 4G interfaces in the ANSI 42.42/EURDEP format
- Capability to control all AirTrack operations from a remote computer

Parameter	Value
Detector type	Alpha/Beta: 900 mm² silicon ion-implanted detector Gamma: $SrI_2(Eu)$, optionally $LaBr_3(Ce)$, $CeBr_3$ or NaI(Tl) HPGe with electrical cooling
Energy measurement range	Alpha: 2 – 10 MeV, Beta: 0.05 – 2 MeV Gamma: 0.05 – 3 MeV (SrI_2 detector) 3 keV – 3 MeV (HPGe detector)
Concentration measurement range	Alpha: 10^{-2} to 10^{5} Bq/m³ Beta: 10^{-1} to 10^{5} Bq/m³ Gamma: 10^{-2} to 10^{6} Bq/m³
Relative energy resolution on the line 661,7 keV	**AirTrack-Sr:** < 3.2% at 661.7 keV (for SrI2(Eu) Ø38.1×38.1 mm) **AirTrack-Ge:** < 1 keV at 122 keV, < 2 keV at 1.33 MeV
Power supply voltage	230 V / 50 Hz
Operation temperature	+5 °C – +40 °C

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Alpha-, beta-, gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

AirTrack-I
Iodine Monitoring Station

AirTrack-I Iodine Monitoring Station

with automatic cartridge changer

DESCRIPTION

AirTrack-I represents the state-of-the-art in iodine monitoring, featuring advanced design solutions for automatic gamma spectrometric measurements and cartridge changer mechanics. The use of innovative $SrI_2(Eu)$ scintillation detector, offering high energy resolution and low intrinsic background, ensures maximum reliability in identifying radioactive iodine and significantly lowers the detection limit for its concentration.

AirTrack-I shares the same functional and mechanical design as the AirTrack-Sr Aerosol Monitoring Station. Both monitors are built on a modular principle and feature interchangeable components; however, AirTrack-I utilizes specialized charcoal filters which do not trap other gases, thus ensuring that the sample is enriched specifically with I-131.

APPLICATION

- Continuous automatic measurement of radioactive iodine activity and concentration in ambient air

FEATURES

- TEDA Impregnated Charcoal Filter for capturing radioactive iodine
- Scintillation detector $SrI_2(Eu)$ with <3.5% energy resolution
- Calculation of **I-131, I-132, I-133** and **I-135** activity concentration
- 16(20)-filters capacity removable cartridge, up to 2-month autonomy
- Evaluation of measurement results according to ISO 11929
- Automatic filter change when total activities or differential pressure thresholds are exceeded, or after the expiration of the specified measurement time;
- two programmable thresholds (notification and alarm) for radiological events;
- Automatic stabilization of gamma spectrometric channel with K-40 peak
- Continuous self-testing procedures with an alarm signal and messages

Parameter	Value
Detector type	$SrI_2(Eu)$ ($LaBr_3(Ce)$, $CeBr_3$ or NaI(Tl) optionally)
Gamma energy range	from 50 keV to 3 MeV
Energy resolution at the 662 keV line	3.2% (for $SrI_2(Eu)$ Ø38.1×38.1 mm)
Measurement range of I-131 volumetric activity	from 10^{-2} to 10^6 Bq/m^3
Decision threshold for I-131 (ISO 11929):	• 10 min: not more than 1.5 Bq/m^3 • 60 min: not more than 0.2 Bq/m^3 • 360 min: not more than 0.01 Bq/m^3
Nominal flow rate	adjustable, from 3 to 10 m^3/h
Flow regulation accuracy	2% max.
Noise level (ISO 2151)	not more than 62 dB(A)
Power supply	230 V / 50 Hz
Operating temperature range	+5°C … +40°C

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

AirTrack-Mobile
Alpha/Beta Monitor

AirTrack-Mobile
Alpha/Beta Monitor

DESCRIPTION

AirTrack-Mobile is a compact aerosol monitoring system featuring advanced design solutions for automatic alpha and beta spectrometric measurements. It utilizes a special version of a Silicon Ion-Implanted Detector (SIID) with an active area of 900 mm² for both alpha and beta spectrometry. Measurements can be conducted under high-background conditions — compensation for radon, thoron, and their progeny is performed algorithmically through spectrometric analysis. To reduce the influence of gamma background, an auxiliary SIID is used to measure beta-equivalent pulses and subtract them from the total beta count.
A modular approach to the design of AirTrack-Mobile hardware and software enables fast troubleshooting of system issues. Moreover, the modular design facilitates easy upgrades and integration of future equipment.

APPLICATION

- Continuous automatic measurements of alpha/beta radionuclides concentration in the form of airborne aerosols

FEATURES

- 900 mm² silicon ion implanted detector for alpha/beta measurements
- 15 meters filter tape, up to 3-month autonomy
- Radon progeny and gamma background compensation
- Evaluation of measurement results according to ISO 11929
- Automatic filter change when total activities or differential pressure thresholds are exceeded
- Continuous self-testing procedures with an alarm signal and messages
- Capability to use disk filters in manual measurement mode
- Optional: UPS for 30 minutes autonomous operations
- Optional: Gamma Dose Rate Monitor (GDRM)

Graphical user interface of the LCD Touch Panel of the on-board computer

Parameter	Value
Alpha energy measurement range	2 – 10 MeV
Beta energy measurement range	0.05 – 2 MeV
Detection efficiency	^{241}Am: ≥0.15, ^{90}Sr/^{90}Y: ≥0.2
Alpha concentration measurement range	10^{-2} – 10^{5} Bq/m³
Beta concentration measurement range	10^{-1} – 10^{5} Bq/m³
Radon and Thoron measuring range	from 10^{-1} to 10^{5} Bq/m³ with automatic Radon progenies compensation
Voltage and frequency	230 ± 20 V AC 50 Hz, 800 W max
Temperature	from 0 °C to +40 °C, 85 % RH non-condensing
Dimensions & Weight	800 × 780 × 1575 mm, no more than 60 kg
Protection	IP 54

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Alpha-, beta-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

WaterTrack
Online Water Monitoring Station

WaterTrack
Online Water Monitoring Station

DESCRIPTION

WaterTrack Online Water Monitoring Station is designed for continuous monitoring of the specific activity content of Cs-137 and/or other radioactive elements in Bq/l in running water. Utilizing a high-sensitivity scintillator, it enables real-time detection and quantification of radioactive elements in liquids. The system is ideal for environmental surveillance, industrial discharge monitoring, and water treatment facilities, offering low detection limits and precise measurements. Its robust design ensures consistent performance in diverse conditions, while user-friendly interfaces simplify operation and data analysis.

The biggest advantage of the WaterTrack Online Water Monitoring Station is that it does not require stopping the water supply for sampling. Water analysis is performed in real time. This is especially critical when monitoring drinking water. The WaterTrack Online Water Monitoring Station operates without the need for an on-site operator, and measurement results can be accessed remotely via a dedicated software package — RAVEN. Data transmission is carried out using the Modbus/TCP protocol.

The station can function as a standalone unit or be integrated into a network of similar stations designed for continuous monitoring of water and air. A central web-based software package, RAVEN, is available to connect all WaterTrack Online Water Monitoring Stations into a centralized measurement network.

FEATURES

- Sealed metal cabinet with pipes for connecting to the water supply system, including a stainless steel tank with a capacity >15 liters
- 5 cm lead shield installed around the tank
- Ø2x2” scintillation detector $SrI_2(Eu)$ with <3.5% energy resolution installed inside the tank with (NaI(Tl), $CeBr_3$ – optionally)
- 4096 channels MCA for gamma spectrometry
- Evaluation of measurement results according to ISO 11929
- Automatic stabilization of gamma spectrometric channel with K-40 peak
- Continuous self-testing procedures with an alarm signal and messages

ONBOARD SOFTWARE MAIN FUNCTIONS

- Measurement of specific activity, dead time, count rate, etc.
- Background measurement
- Measurement of the flow of pumped water
- Measurement database
- Measurement log
- Graphic and tabular presentation of measurement results with the ability to select data for a period
- Large nuclide library

Parameter	Value
Gamma energy range	from 0.08 to 3 MeV
Gamma concentration measuring range	from 0.5 to 10^6 Bq/m^3
Total number of identified radionuclides	15 (adjustable)
Maximum flow rate	up to 50 l/min
Maximum pressure	up to 10 bar
Operational temperature	from 0 to +50°C
Dimensions	600 x 820 x 1680 m

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Gamma-rays

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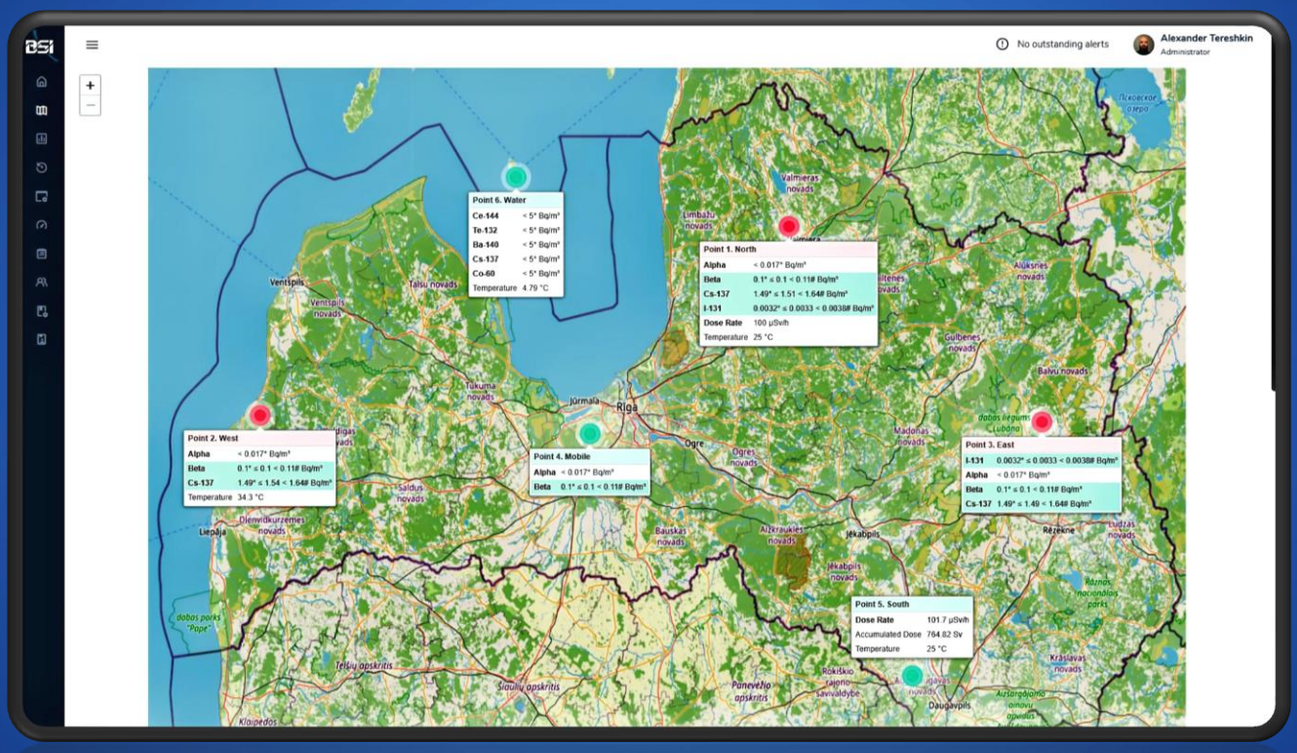


RAVEN

Radiation Analysis and Visualization Environment Network software

RAVEN
Radiation Analysis and Visualization Environment Network software

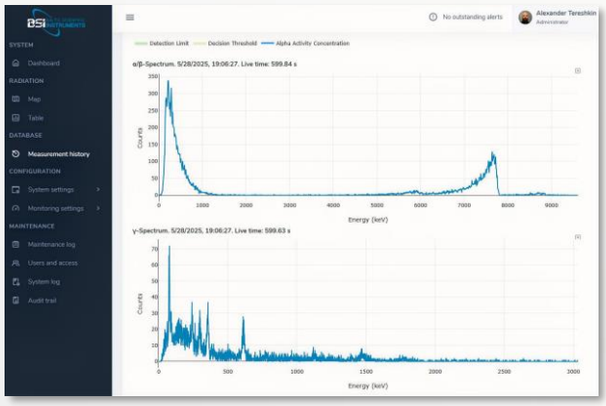
DESCRIPTION

Radiation Analysis and Visualization Environment Network RAVEN software is a web-based user interface for managing online flow of data accumulated from one or a number of Radiation Monitoring Stations (**AirTrack** family). The software package is built on several blocks, such as:

- Main dashboard with general information
- A map displaying all Stations and key current values
- Measurement results is a block with displays detailed flow of data from each Station
- Summary report.

FEATURES

- Multi-layered network (stationary, mobile, and laboratory stations)
- Real-time monitoring of air and water radiation levels
- Using a map of any area (site, city, region, country)



The radiation spectrum registered by each monitor can be accessed at any time

HOW IT WORKS

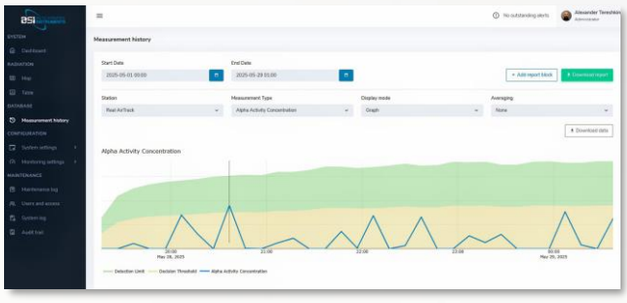
The current status of each monitor at every measurement station can be tracked in the Dashboard.

Measurement results for each monitor are available in a dedicated window in tabular format in compliance with ISO 11929. This window also provides access to technical parameters and the alpha/beta or gamma radiation spectra for each monitor. This option helps assess detector's performance and, together with valid technical parameters, supports quality assurance of the measurement results.

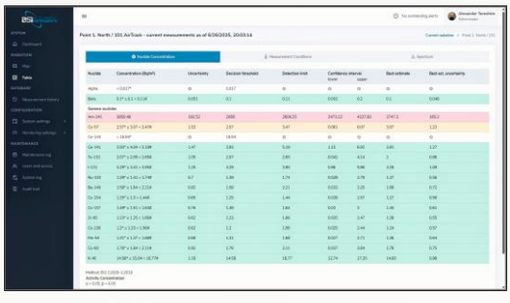
The software generates a summary report for a selected alpha, beta, or gamma radionuclide concentration in a single table showing all monitors measuring that radionuclide. Ambient dose equivalent rate values are also presented in tabular form, both from GDRM and, if available, from AirSpec, WaterSpec, or WaterTrack spectrometers.

All the results are stored and can be displayed for any selected time period and averaged over 1, 3, 6, 12, or 24 hours, or by month. Multiple blocks can be displayed as time-series charts or tables. The resulting report can be exported as a DOC or PDF file.

The software has two access levels: operator limited to monitoring only and administrator. It also provides a station maintenance history, automatically logs all changes made by to the station configuration, and records all messages from the monitors.



The measurement data can be displayed for any time period



The measurement in a table view

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Alpha-, beta-, gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Spectrometer AirSPEC

Spectrometer AirSPEC

based on scintillator detector

APPLICATION

Radiation monitoring and various applications, such as:
Determining the specific effective activity of naturally occurring radioactive materials (NORM) in building materials, raw materials, industrial waste without the need for sampling.
Surface activity measurement of radionuclides such as Cs-137
Surface contamination assessment of soil and for the prospecting and exploration of mineral deposits. The spectrometer is suitable for operation both in laboratory settings and in the field.

DESCRIPTION

The AirSPEC scintillation gamma-ray spectrometer is designed for measuring gamma radiation spectra, as well as determining the activity and specific activity of radionuclides in both prepared and natural samples under 2π and 4π geometries.

FEATURES

- Online gamma spectrum acquisition and readout
- Ambient equivalent dose rate H*(10) calculation [mkSv/h]
- Automatic radionuclide identification
- Radionuclide concentration indication [Bq/m^3]
- Two thresholds (warning and alarm) for concentrations and dose rate
- Automatic stabilization of spectrometric channel by K-40 peak
- Rugged outdoor housing with IP67 protection, UV and heat-resistant (up to +90 °C)
- Thermostabilizing housing for a wider range of operating temperatures

PURPOSE

- Measurement of local dose rate in the ambient air
- Identification of gamma-emitting radionuclides
- Calculation of radionuclides activity and concentration

LIST OF IDENTIFIABLE RADIONUCLIDES

Ce-144, Te-132, I-131, Ba-140, Cs-134, Cs-137, Zr-95,Mn-54, Co-60, La-140

Parameter	Value
Detector type	NaI(Tl) Ø51 × 51 mm ($LaBr_3$, $CeBr_3$, SrI_2 – optional)
Measured energies range	80 – 3000 keV
Gamma dose rate measuring range	from 10 nSv/h to 0.1 mSv/h
Relative energy resolution on the line 661,7 keV	< 8% for NaI(Tl) < 3.5% for SrI_2
MCA channels	1024
Power supply voltage	4.5 – 18 V
Power consumption: - thermostabilization OFF - thermostabilization ON	1.5 W 25 W
Data transfer interface	RS-485
Shell protection level	IP67
Operation temperature	-15 °C ÷ +60 °C
Dimensions	Ø55 × 370 mm
Weight:	6.4 kg

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Spectrometer WaterSPEC

Spectrometer WaterSPEC

based on scintillator detector

BALTIC SCIENTIFIC INSTRUMENTS

DESCRIPTION

WaterSPEC is a monoblock unit that integrates a scintillation crystal, photomultiplier tube (PMT), high-voltage (HV) converter, amplifier, multichannel pulse analyzer, and processor unit. WaterSPEC is designed for both indoor and outdoor use in aquatic environments. Its waterproof housing features an IP68 protection rating, offering complete protection against dust and allowing for continuous immersion in water at depths of up to 2 meters.

PURPOSE

- Identification of gamma-emitting radionuclides
- Calculation of radionuclides concentration in water
- Measurement of local dose rate

FEATURES

- Online gamma spectrum acquisition and readout
- Ambient equivalent dose rate H*(10) calculation [mkSv/h]
- Automatic radionuclide identification
- Radionuclide concentration indication [Bq/m^3]
- Two thresholds (warning and alarm) for concentrations and dose rate
- Automatic stabilization of spectrometric channel by K-40
- Data transfer via RS-485 interface
- Rugged waterproof housing with IP68 protection

LIST OF IDENTIFIABLE RADIONUCLIDES

Co-57, Ce-144, Mo-99, Te-132, Ru-103, I-131, Ba-140, Cs-134, Cs-137, Zr-95, Nb-95, Ag-110, Fe-59, Mn-54, Co-60, La-140

Parameter	Value
Detector type	NaI(Tl) Ø51 × 51 mm ($LaBr_3$, $CeBr_3$, SrI_2 – optional)
Measured energies range	80 – 3000 keV
Gamma dose rate measuring range	from 10 nSv/h to 0.1 mSv/h
Relative energy resolution on the line 661,7 keV	< 8% for NaI(Tl) < 3.5% for SrI_2
MCA channels	1024
Power supply voltage	4.5 – 18 V
Data transfer interface	RS-485
Shell protection level	IP68
Operation temperature	0 °C ÷ +30 °C
Dimensions	76 × 420 mm
Weight: - without a cable - with a cable 20 m	2.8 kg 3.7 kg

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BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Gamma Dose Rate Monitor GDRM

Gamma Dose Rate Monitor GDRM

DESCRIPTION

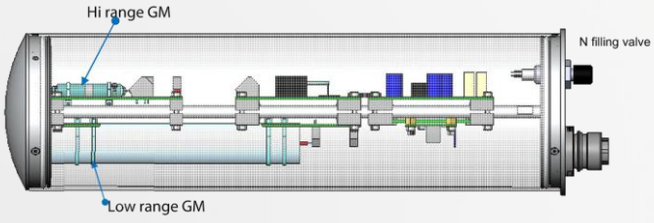
The Gamma Dose Rate Monitor GDRM is designed to measure dose rates that may result from accidental releases at nuclear power plants (NPPs). It is suitable for both indoor and outdoor monitoring and can also be used as an auxiliary component of a Radiation Monitoring Station, for example, as part of the AirTrack-Mobile system.
The equivalent dose rate is measured using a proprietary, dead-time–independent method. Dose rate values from two separate channels (Low Range and High Range) are combined to calculate an overall dose rate, taking into account the statistical precision of each measurement. The individual channel dose rates, the calculated overall dose rate, and their associated statistical uncertainties are made available for further processing via dedicated data protocols.

FEATURES

- Two energy compensated Geiger-Mueller counter tubes:
  - Wide dose rate measurement range
  - Dead-time independent operations
- Rugged outdoor housing with IP67 protection, UV and heat-resistant (up to +90°C)
- Two threshold (warning and alarm) for dose rate and dose
- Supports connection to external alarm device
- Remote data transfer and control
- Automatic self-diagnostics

PURPOSE

- Continuous automatic measurement of local dose rate and local dose in gamma radiation fields



Parameter	Value
Radiation Type	X and Gamma - from 35 keV to 2 MeV
Measured quantities	Ambient dose equivalent rate H*(10), Ambient dose equivalent H*(10). Not for pulsed radiation fields
Measuring range, dose rate	0.04 mkSv/h ÷ 2.5 Sv/h (up to 100 Sv/h)
Relative error (reference Cs-137)	< 20%
Integration time	10 s … 6.55 · 105 s (configurable)
Overexposure	50 Sv/h over 5 min without decrease in counting rate
Maximum dose	10 Sv
Response time	≤ 8 s (1 µSv/h … 10 mSv/h, peak finder activated) ≤ 2 s (10 mSv/h … 5 Sv/h, peak finder activated)
Data interfaces	RS 485, RS 232, option USB
Operating temperature	−40 °C to +70 °C
Power supply	10.6 ÷ 30 VDC, 1.5 W
Protection	IP67 (including connector and filling valve)
Enclosure	Ø 100 x 400 mm
Weight	< 1.7 kg

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Gamma-rays

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Bringing Solutions

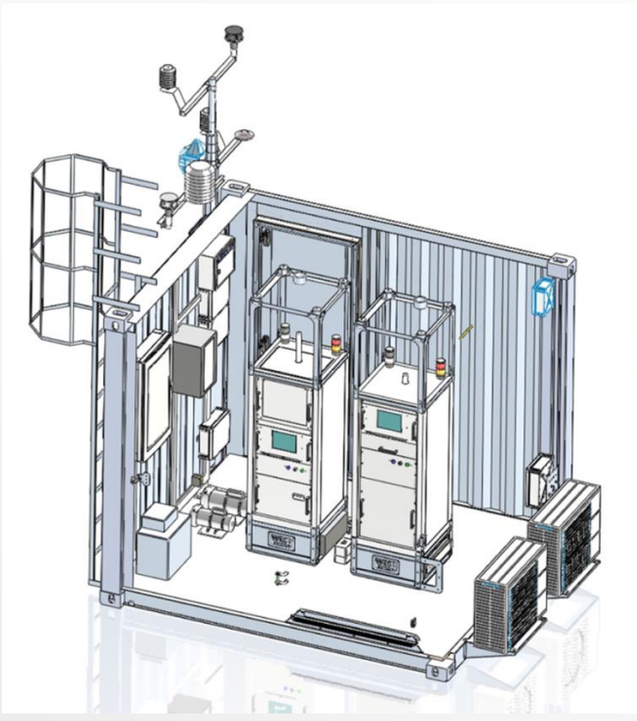
Container-Based Laboratory for online radiation monitoring

Container-Based Laboratory
for online radiation monitoring

DESCRIPTION

The container is equipped with a set of systems to maintain optimal temperature and humidity conditions inside. Depending on the monitoring purposes and conditions, it is possible to install a combination of different Radiation Monitoring Stations from the AirTrack family inside the container.
For example:

- AirTrack for alpha/beta/gamma,
- AirTrack-I for iodine monitoring,
- Air sampler,
- Gamma Dose Rate Monitor GDRM,
- Ambient Gamma Spectrometer based on AirSpec,
- Meteo station,
- etc.



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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Scintillation Detectors

Scintillation Detectors and accessories

DESCRIPTION

Scintillation detectors are used to register and analyze gamma-radiation in energy range from 20 keV to 3 MeV when irradiated with a radioactive source. The detector consists of scintillator crystal optically connected to a photomultiplier tube, wrapped in an antimagnetic screen and placed in a sealed aluminum case. Depending on customer requirements, scintillation detectors can be based on different crystal materials, such as NaI (Tl), CeBr3, LaBr3, SrI or others.

APPLICATION

- radiation monitoring,
- radiation logging in boreholes,
- scintillation spectrometry,
- detection of alpha- and beta-radiation,
- tomography
- high-energy physics
- and many others

ACCESSORIES

- Spectrum stabilization by using Am or LED source
- Digital MCA MCABase
- Analytical software package
- Holders and tripods
- Lead shielding for low background measurements
- Protective cases for underwater applications
- Cable set

Material	Dimensions*, mm	Energy resolution at 662 keV, %	Energy range	Registration efficiency**, %	Advantages
NaI(Tl)	51x51 63x63 76x76 150x100	<7 <7.5 <8 <12	20 keV - 3 MeV	0.65 1.2 2 7.5	Low price
LaBr3(Ce)	51x51 63x63 76x76	<3.1 <3.3 <3.5	20 keV - 3 MeV	1 1.5 2.5	High resolution
CeBr3	25x25 38x38 51x51	<4.2 <4.3 <4.3	20 keV - 3 MeV	0.14 0.4 1	High resolution, Low background and MDA
SrI2	25x25 38x38	<2.8 <2.9	20 keV - 3 MeV	0.14 0.4	Low background and MDA

*** - dimensions for reference only. Choice is not limited to the list.**
**** - at 662 keV by a point-like Cs-137 source at a distance of 5 cm from the detector's top**

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Gamma-rays

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Bringing Solutions

Gamma–, beta- and alpha-spectrometer–radiometer TRIO

Gamma–, beta- and alpha-spectrometer–radiometer TRIO

DESCRIPTION

The TRIO Spectrometer is designed for detecting gamma, beta, and alpha radiation, as well as measuring specific and volumetric activity of radionuclides in various samples. It supports analysis of natural radionuclides (e.g., Ra-226, Th-232, K-40, Rn-222) and technogenic radionuclides (e.g., Cs-137, Cs-134, Co-60, Tc-99m, Sr-90) in water, food, vegetation, building materials, soil, radiopharmaceuticals, rocks, chemical industry materials, alloys, scrap metal, and other industrial products. Additionally, it measures gross alpha/beta activity in water, making it ideal for environmental monitoring, nuclear safety, and industrial quality control.

FEATURES

- Ability to manage several channels simultaneously
- Intuitive and user-friendly software
- Low Power Consumption
- Compact size of each chamber
- Free to choose channels of your interest depending on application
- Easy extension of channel quantity
- 100% remote control of the spectrometer TRIO via software package

COMPLETE SET

- Detection unit
- Lead shielding with stable platform
- Multichannel analyzer
- Analytical software package
- Cable set

Parameter	Value
Energy range, keV - for gamma radiation - for beta radiation - for alpha radiation	 40-3000 65-4000 1500-10000
Relative energy resolution on the line 661,7 keV, measuring with radionuclide source Cs-137, %	From 3 to 12 depending on detector type
Maximum throughput, cps	$> 5 \cdot 10^4$
Integral nonlinearity in the gamma energy range from 40 to 3000 keV, %	1
Integral nonlinearity in the beta energy range from 65 to 4000 keV, %	2
Instability of spectrometer indications (energy conversion characteristic) for 24 hours of a continuous operation, %	±1
Operation conditions: - ambient air temperature, 0C	from +10 to +40
- relative air humidity, %	up to 80
- atmospheric pressure in the range of, kPa	from 84 to 106,7
- intensity of magnetic fields of the permanent and variable grid frequencies, A/m	up to 40

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Gamma-rays

BALTIC SCIENTIFIC INSTRUMENTS

Bringing Solutions

Mobile Radiation Monitor GammaCART

Mobile Radiation Monitor GammaCART

DESCRIPTION

Mobile spectrometric system Mobile Radiation Monitor is designed to measure gamma radiation energy distribution, identify gamma emitting radionuclides, as well as calculate specific and surface activity of gamma emitting radionuclides under conditions of their natural occurrence and at nuclear industry premises. In addition, the system can be used for radiation monitoring, e.g., for examination of large areas, searching lost or stolen gamma radiation sources, study of radionuclide precipitation near radiation hazardous sites without preliminary sampling.

COMPLETE SET

- Electric vehicle as a mobile platform
- Gamma radiation spectrometer
- Thermostabilization system (for NaI(Tl) or LaBr3(Ce) detectors),
- Navigation system including an external antenna
- Shockproof toughbook operable in harsh conditions
- Fixation and positioning system for the detection units
- Router with an antenna that connects the analyzer, navigation system, and Toughbook
- Charger for the electric vehicle

OPTIONS

There are various modifications of system Mobile Radiation Monitor:

- Containing spectrometer with one or two NaI(Tl) scintillation detection units
- Containing spectrometer with one or two LaBr3(Ce) scintillation detection units
- Containing spectrometer with one or two HPGe detection units

Parameter	Value
Relative energy resolution for LaBr3(Ce)	3.5%
Registration efficiency for LaBr3(Ce)	at least 0.6%
Energy range	40 keV ÷ 3000 keV
Integral nonlinearity	< ±1.0 %
Energy conversion function (during 24 hours)	< ±1.0 %
Maximum throughput of the spectrometer	at least $5 \cdot 10^4$ cps
Speed range of the electric vehicle fast mode slow mode	 4 km/h – 25 km/h 0.5 km/h - 4 km/h
Operation setting time	<10 minutes
Continuous operation time	at least 8 hours
Completely charged	10 hours
Temperature range	from -10°C to +55°C
The average MTBF	10000 hours

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Gamma-rays

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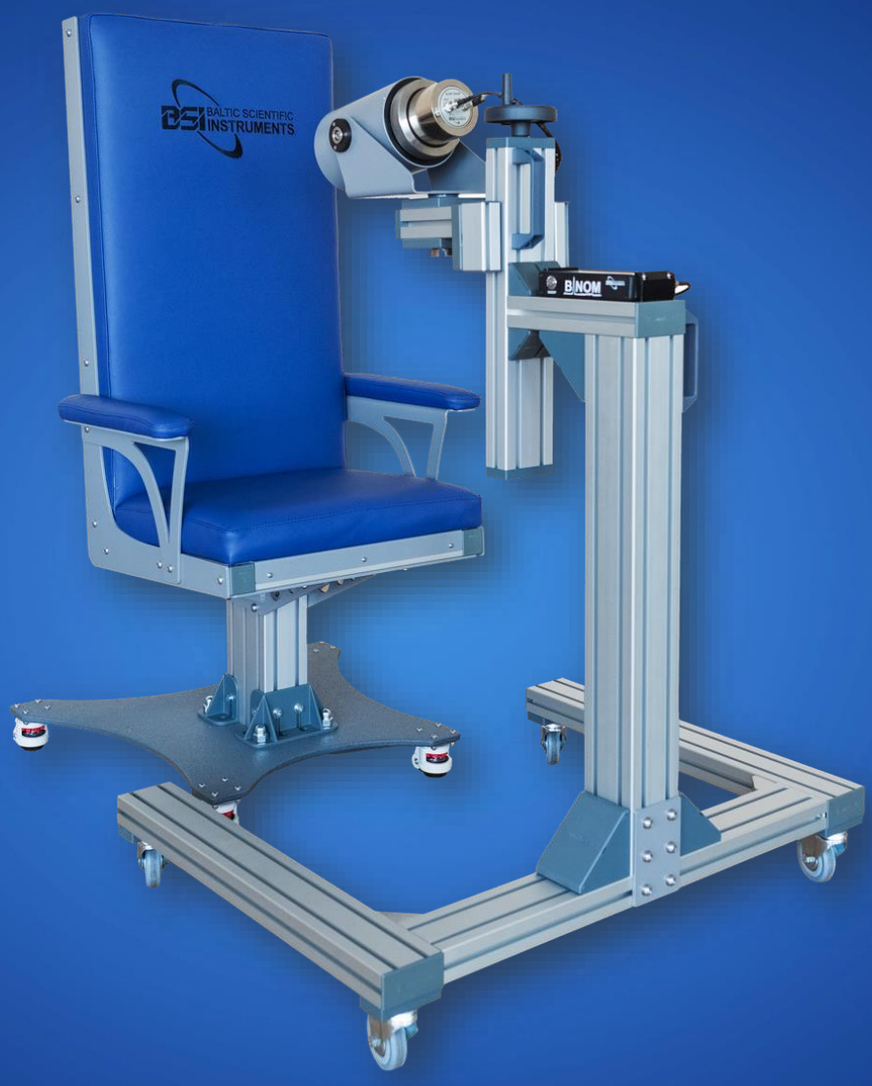


Thyroid / Lung monitors

Thyroid/Lung monitor

APPLICATION

Whole body counting (WBC) system, is designed for identification of radionuclides content in human body and organs, in particular thyroid gland or lungs. By its sensitivity WBC system is in compliance with up-to-date requirements for radiation standards in internal irradiation level control of personnel on facilities and plants of nuclear-fuel cycle, in medical facilities in regions with high probability of pollution by induced radionuclides, etc.

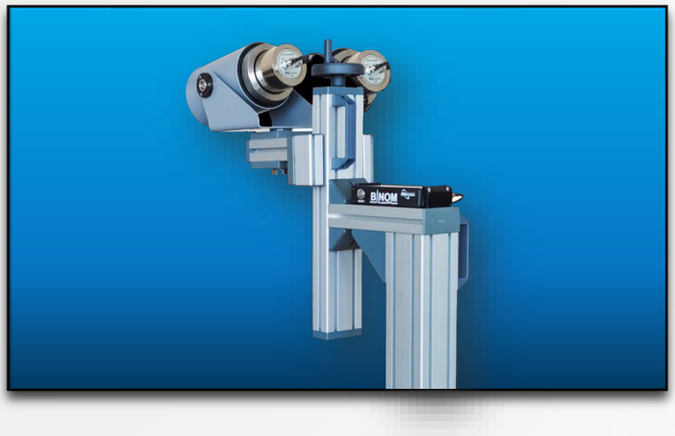
DESCRIPTION

Thyroid / Lung monitor is made of light and compact aluminum construction which is really easy to handle for everyday usage. The main holder has wheel base and handle to move the measuring part around the facility. When it is fixed in certain location, the operator is capable of adjusting the position of the detector in vertical and horizontal position to find the most convenient position for the person being analyzed.

In order to guarantee the best performance of the system in terms of MDA, our detector is covered with lead shied and equipped with collimator. Moreover, the comfortable chair has lead plate installed in the back to avoid interference of other objects and to have good parameters of background.

COMPLETE SET

- Gamma radiation detection unit based on scintillation detector
    - One unit for Thyroid monitoring
    - Two units for Lung monitoring
- Digital Spectrometric device
- Lead with collimator set
- Stand and detection unit holder
- Chair with lead shielding
- Analytical software



Parameter	Value
Detector type*	NaI, Ø63*63mm
Spectrometer provides registration of gamma-radiation in the energy range	0.05 - 3.0 MeV
Radionuclides activity measurement range, for 5 min	85...10^5 Bq for I-131 110...10^5 Bq for I-133
Minimum measured activity: thyroid measurement for 30 min	30 Bq for I-131 45 Bq for I-133
Number of ADC channels	512 – 4k
Typical resolution at 662 keV (137Cs)	< 7,5%
Measurement instability	±1% max.
Working temperature range	+10°C...+35°C
Operation mode setup time	10 min

*** - Other detector materials and sizes are available.**

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Silicon Ion Implanted Alpha Particle Detectors (SIID)

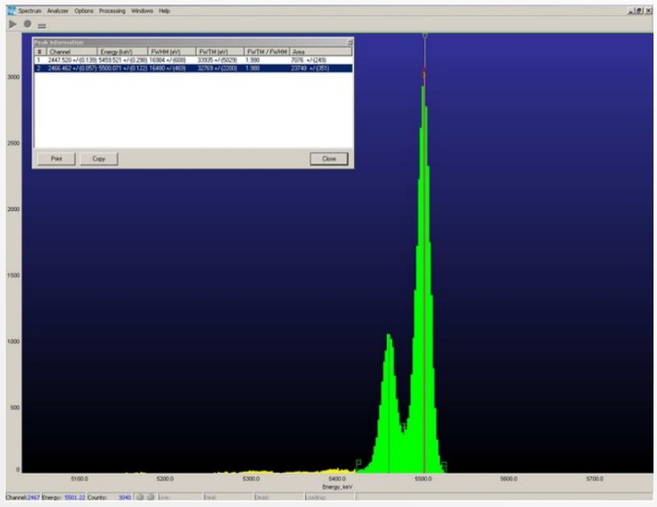
Silicon Ion Implanted Alpha Particle Detectors (SIID)

DESCRIPTION

Silicon Ion-Implanted Alpha Detectors are designed for precise alpha spectroscopy. Their thin entrance window ensures good energy resolution, even when the alpha-emitting source is in close proximity, providing high-efficiency detection of alpha particles.

FEATURES

- The detectors can operate without hermetic sealing due to location of the P-N junction inside the detector crystal.
- Contacts are formed using the ion-implantation method, resulting in thin, well-defined junctions.
- Relatively thin dead layer (less than 500 Å).
- High-strength entrance window.
- Suitable for operation in vacuum.
- Detectors can be annealed at temperatures up to 100 °C.
- Available in various package types with BNC or MICRODOT connectors or with wire leads tailored to customer requirements.
- Produced with either an open window or a metallized window.



^{238}Pu spectrum

Silicon Ion-Implanted Alpha Particle Detectors with a metallized entrance window coating can be used as part of radioactive aerosol monitoring systems. This special version of the detector has the following features:.

- Allows operation in ambient light.
- The metal coating provides mechanical and chemical protection; the entrance window thickness is less than 2 µm.
- Operates at a bias voltage from +15 V to +24 V.

Detector area, mm^2	Alpha energy resolution*, keV (Open/Metalized)	Beta energy resolution*, keV (Open/Metalized)	Thickness, µm	Detector bias voltage, V
50	12/15	6/9	300 ± 30	50-70
100	14/19	8/15	300 ± 30	50-70
300	16/21	14/17	300 ± 30	50-70
450	20/25	15/17	400 +/- 30	50-70
600	25/30	20/23	400 +/- 30	50-70
900	30/35	25/28	400 +/- 30	50-70
1200	35/40	30/35	400 +/- 30	50-70

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Alpha-rays

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Alpha Spectrometer Amber (2, 8 & 12 channels)

Alpha Spectrometer αmber

DESCRIPTION

The alpha spectrometer is designed to convert alpha particle energies into electrical signals, amplify and filter these signals, and transform them into spectral lines for analysis, including the determination of their intensities. The benchtop alpha spectrometer α2 features two measurement chambers, allowing for the simultaneous analysis of up to two samples. Each chamber of the alpha spectrometer includes an alpha particle detector, a pressure sensor, and a preamplifier for signals from the detector.

The complete spectrometer consists of a stainless-steel vacuum chamber, power supply, preamplifier, pulse generator, discriminator, and counter. The vacuum chamber supports the installation of most types of detectors, including high-resolution Silicon Ion-Implanted Alpha Particle Detectors (SIIDs) with active areas of up to 1200 mm².The sample holder inside the vacuum chamber allows for adjustment of the distance between the sample and the detector.

FEATURES

- Device management via external PC software
- Vacuum gauge with pressure display and software control
- Detector current measurement from 1 nA to 10 µA
- High-voltage cutoff in case of vacuum loss
- Reverse bias applied to the sample holder
- Integrated multichannel analyzer
- Built-in calibration pulser
- Stainless steel vacuum chamber
- Supports samples up to 50 mm (2 inches) in diameter
- Compatible with alpha detectors up to 1200 mm²
- Adjustable sample-to-detector distance from 4 mm to 48 mm (in 4 mm steps)

AlphaPRO software for Amber

Parameter	Value
Number of spectrometry chambers with alpha detectors, preamplifiers, electronics, valves, etc.	**Amber-2**: 2 **Amber-8**: 2 to 8 **Amber-12**: 2 to 12
Count rate	0-50 000 pulses/s
Shaping time constant, switchable	1 µs
Variable gain coarse and fine	Up to 500
Noise level (referred to the input)	< 3 mV for 2 µs
Pole-zero adjustment	Available
Live time correction	Available
Opportunity to operate with pulse feedback preamplifier	Available
Base line auto restoration	Available
Gain stability	<0.0075 %/s
Integral nonlinearity	< 0.025 %

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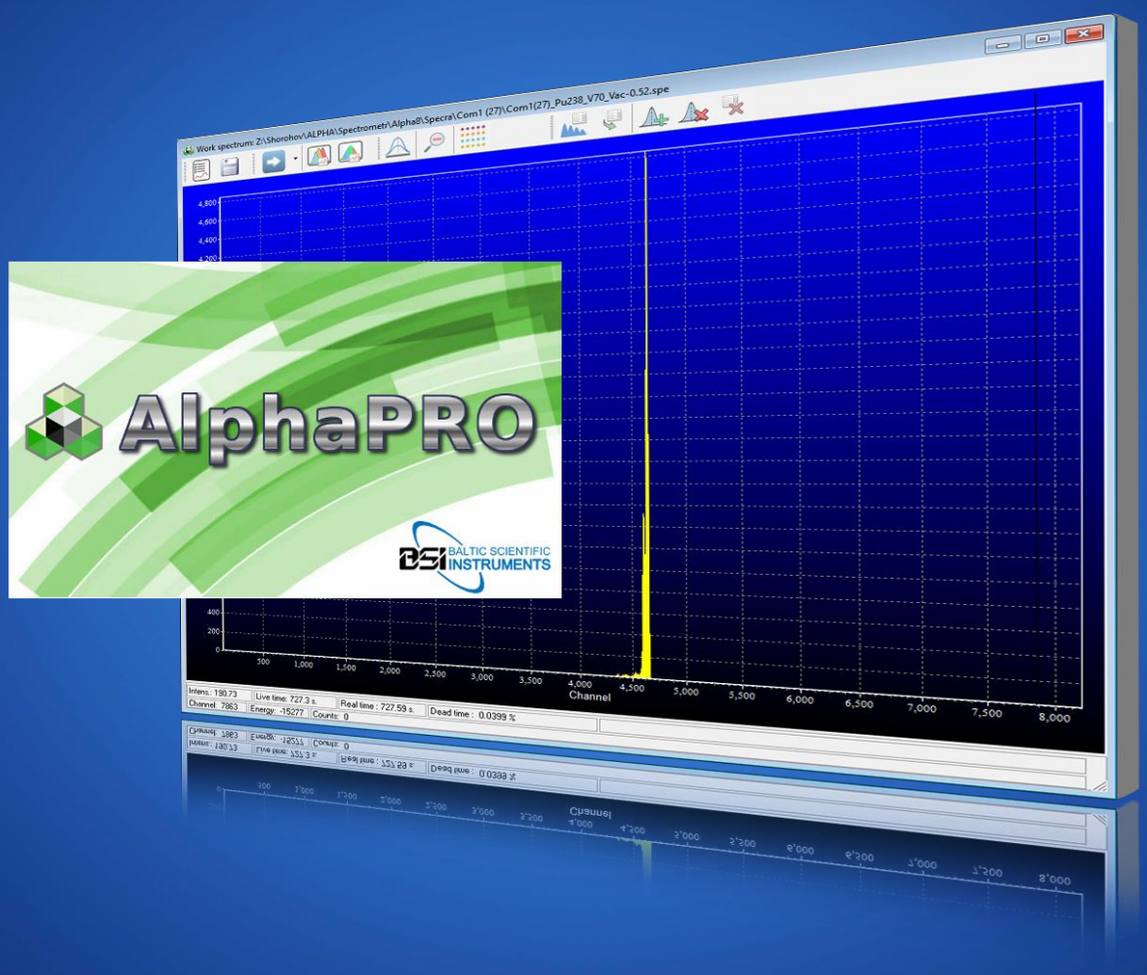

Alpha analysis software AlphaPRO

Alpha analysis software AlphaPRO

DESCRIPTION

AlphaPRO is the successor to the GammaPRO program, adapted with certain limitations but designed specifically for alpha spectrometry tasks. It incorporates advanced algorithms for determining sample activity, including the ROI method with an overdetermined matrix, individual peak analysis, and the superposition method.For high-resolution spectra obtained from semiconductor spectrometers, AlphaPRO offers specialized tools such as peak search, Gaussian approximation, isotope identification, and efficiency curve plotting.

FEATURES

- Supported Amber models: Amber-2, 4, 8, 12
- Visualization of spectra and spectrum acquisition progress
- Peak search and fit by Gaussian
- Identification of radionuclides
- Energy, FWHM and peak shape calibration
- Calculation of efficiency curves and sensitivities
- Calculation of activity by peak method
- Calculation of activity by matrix (ROI) me/thod
- Calculation of MDA according ISO 11929
- Simple and easy to use report editor
- Library of radionuclides and library editor
- Mathematical operations (sum, subtraction, normalization etc.)
- Batch spectra processing
- Simple and easy to use report editor
- Library of radionuclides and library editor
- Quality assurance control
- Database MS Access which provides transfer and storage of measurement results in a database
- Log which provides automatic registration and storage of measurement and quality assurance results
- Support for the main spectrum formats: SPE, N42, CNF, CHN, SPC, ASW, TXT etc.

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Alpha-rays

Service & Support

Except for developing and manufacturing of Spectroscopy systems, Baltic Scientific Instruments is also offering maintenance of Gamma spectrometers, Alpha spectrometers and Scintillation spectrometers, service and repair of HPGe, SiLi and CZT detection units and electronics produced by BSI and other manufacturers.

Baltic Scientific Instruments specialists are available at the factory and can travel to the site of installation of the equipment to perform the following activities:

- Installation and commissioning of the equipment
- Routine maintenance
- Preventive maintenance
- Repair Detectors and electronics
- User training

We offer service and repair of HPGe detectors and particularly:

- Vacuum restoration
- Repair and replacement of preamplifier
- Replacement of damaged cryostats, end caps and other parts. Radioactive-pure materials like Aluminum, Copper, etc. are available. Ultra low-background materials are also possible to use
- Replacement of broken input window made of Aluminum, Beryllium, Carbon fiber and Polyimide
- Old Germanium detector transfer into a new cryostat
- Recovery of detector parameters

Any HPGe detector manufactured and repaired in BSI can be accompanied with X-ray image of detector capsule indicating exact position of the HPGe detector under the end cap. Such precision is vitally important in case of Monte-Carlo measurements.

For additional information, please contact us: service@bsi.lv

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